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EDITED IN ENGLISH AND GERMAN

BY

DR. H. KNAPP
OF NEW YORK

AND

DR. C. SCHWEIGGER
OF BERLIN

IN CONJUNCTION WITH

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VOLUME XIV.

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NOTICE TO OUR READERS.

The ARCHIVES OF OPHTHALMOLOGY contain *original papers* on all branches of ophthalmic surgery, and *original reports* on the progress of ophthalmology. The original papers occupy from two thirds to three fourths of the space, and their scope embraces all subjects of scientific and practical interest connected with this department of medicine.

The object of the ARCHIVES is to guard, solidify, extend, and diffuse the stock of acquired ophthalmic knowledge by recording the constant addition of new observations, investigations, methods and means of examination, clinical experience, instruments and remedies, and further by taking part in the discussion of the questions of the day with a spirit alike conservative and progressive.

Particular attention is paid to the preparation of the Report on the Progress of Ophthalmology. The report is intended to furnish a *complete, systematic and early* review of the current ophthalmological literature of the world. It has been necessary to divide the work of its preparation among a number of collaborators according to the following arrangement:

Dr. H. MAGNUS, lecturer at the University of Breslau (22 Tauentzien Strasse):

1. *General Ophthalmological Literature:*
   - *a.*—Text-books (not abstracts, but notes pointing out what is new and characteristic).
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7. *Injuries and Foreign Bodies of these parts.*

Dr. A. NIEDEN, of Bochum, Westphalia:

1. *Uveal Tract*, including glaucoma.
2. *Refracting Media*, including the lens.
3. *Retina and Optic Nerve.*
4. *Injuries and Foreign Bodies of these parts.*
5. *Ocular affections in connection with general diseases.*

In order to obtain complete and recent reviews on the non-German ophthalmological literature, special reporters have been selected for different countries, who will send monthly abstracts of all local ophthalmological publications to Dr. C. Horstmann, of Berlin, the editor of the Report. Dr. Hortsmann will distribute these abstracts among the German reporters according to the above plan, in order to preserve the systematic arrangement, which we think of paramount importance.

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In the interest of our readers, who are scattered over the whole world—and whom, like ourselves, we desire to keep informed of all advances in ophthalmology—furthermore in their own interest, authors of ophthalmological works are requested to send reprints, duplicates of journals, or copies for reviewing, to one of the above named reporters, or to the editors or publishers of the Archives, according to their convenience.

The abstracts of American ophthalmological literature formerly appeared under a special head, but are now embodied in the systematic Report. Text-books may be specially noticed.

The number of good papers offered us for publication has increased to such an extent that it is no longer possible to translate all of them unabridged. Whenever a German paper is condensed in the English version, or *vice versa*, it will be so stated. Should any one of our readers wish to recur to the original, the editors will always take pleasure in sending it for reference.

Under the heading of "Miscellaneous Notes," there will be published all kinds of professional news which specially concern the oculist, *e. g.*, appointments, honors, resignations, vacancies, new ophthalmic hospitals, opportunites for instruction, prize questions and essays, announcement of Society meetings, etc. Brief notices of this kind will be thankfully received by the editors.

Original papers of value from any source will, as heretofore, be welcome to the ARCHIVES, and are solicited.

EDITORS:

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NOTICE TO CONTRIBUTORS.

THE editors and publishers of the ARCHIVES beg to offer some suggestions to authors who propose to favor them with their contributions.

1. As original communications the ARCHIVES can accept only such papers as have neither been printed nor are intended to be printed in other journals. If a preliminary communication on the subject of a paper has been published, the author is requested to state this in the letter accompanying his manuscript. It is understood that contributors to these ARCHIVES and editors of other periodicals, will make no abstracts of the original papers published in this journal without giving it due credit for the same.

2. Authors will receive gratuitously twenty-five reprints of their articles. If a greater number is desired,—notice of which should be given at the head of the manuscript,—only the additional cost of presswork and paper will be charged to the author.

3. In preparing manuscript for the compositor it is requested that the following rules be adhered to:

a Write on one side of the paper only.

b. Write without breaks, *i. e.* do not begin a new sentence on a new line. When you want to begin a new line or paragraph at a given word, place before it in your MS. the sign ¶.

c. Draw a line along the margin of such paragraphs as should be printed in smaller type, for instance, all that is clinical history in reports of cases, etc.

d. Words to be printed in *italics*, should be underscored once, in SMALL CAPITALS twice, in LARGE CAPITALS three times.

4. Authors may receive proofs for revision if they will kindly return them without delay. We beg however to remind our contributors that changes in the copy are equivalent to resetting, causing so much additional expense. We therefore request them, to make, if possible, no alterations at all in their MSS., or, at least, to limit these to what is of essential importance.

ARCHIVES OF OPHTHALMOLOGY.

REPORT OF SIXTY-THREE CASES OF EXTRACTION OF CATARACT.

By W. CHEATHAM, M.D.,

LECTURER ON DISEASES OF EYE, EAR, AND THROAT, AT THE UNIVERSITY OF LOUISVILLE.

IN my report of this series of extractions of cataract, I wish to call the attention of the profession to the rapidity of recovery and to the excellent result obtained in those cases operated on at the clinic of the university, to illustrate a matter to which I have given no little thought—that is, the after-treatment, especially in reference to the recumbent posture or rest.

Classification as to Age.

40 Yrs. to 50 Yrs.	50 Yrs. to 60 Yrs.	60 Yrs. to 70 Yrs.	70 Yrs. to 80 Yrs.	80 Yrs. to 90 Yrs.	90 Yrs. to 92 Yrs.
11	7	14	24	5	2

Classification as to Vision.

20/20	20/40	20/50	20/70	20/100	20/200	1/200	Perception of Light.	Zero.
7	16	19	7	5	1	2	3	3

Classification as to Anæsthetic Used or None.

Chloroform.	Ether.	Cocaine.	None.
6	24	3	30

Twenty-four of the sixty-three cases were moved, either in a wagon, a carriage, a street car, or walked, from six blocks to six miles, immediately after the operation, or the next day.

No.	Record.	Name.	Age.	General Health.	Quality and Duration of Cataract.	Functional Examination.	Method of Operating, Course of Healing, and Result, etc.
1	R. E.	M. M., Ind.	74	Good.	Senile. 4 years.	Visual field good.	Graefe linear. No anæsthetic. Bandage left off fourth day. Vision = $\frac{20}{30}$. Reads Jaeger No. 1. Operated upon at the college, and rode two miles in a wagon. Next day rode four miles more.
2	L. E.	M. M., Ind.	74	Good.	Senile. 4 years.	Visual field good.	Gr. lin. Operated upon at same time as right eye. V = $\frac{20}{40}$. J. 1. This is same patient as No. 1.
3	L. E.	B. McK., Ky.	92	Good.	Senile. 10 yrs,	Good.	Gr. lin. Ether. V = $\frac{20}{40}$. J. 1. Patient now 98 years old.
4	L. E.	Mr. C., Ky.	75	Good.	Senile. 2 years.	Good.	Gr. lin. Ether. Slight iritis second day. V = $\frac{20}{30}$. J. 1.
5	L. E.	Mr. S., Ky.	45	Not good. Full of malaria that would not yield to quinine.	Senile. 1 year.	Good.	Gr. lin. Ether. Operated on at the college, and sent to St. Joseph's Infirmary, a distance of about six blocks. V = $\frac{20}{70}$. J. 2.
6	R. E.	Mr. A. M., Ky.	75	Not good. Eczema of face and scalp. This was relieved by tar ointment.	Senile. 2 years.	Visual field good. Opacity of cornea.	Gr. lin., down. Ether. Rapid recovery. V = $\frac{20}{100}$; after needle operation = $\frac{20}{40}$. J. 1.
7	R. E.	Mr. S., Ky.	46	Good.	Senile. 1 year.	Good.	Gr. lin. Ether. Healing process normal. V = $\frac{20}{100}$. J. 2. Operated on at college, and sent six blocks.
8	L. E.	J. L., Ky.	70	Good.	Senile. 2 years.	Visual field good. Opacity of cornea.	Gr. lin. Ether. Healing process normal. V = $\frac{20}{100}$. Operated on at college, and removed one mile.
9	R. E.	Mrs. McC., Ky.	70	Good.	Senile. 3 years.	Good.	Gr. lin. No anæsthetic. Healing process normal. V = $\frac{20}{30}$. J. 1.
10	L. E.	Mrs. D., Ky.	82	Not good. Very feeble.	Senile. 5 years.	Not good.	Gr. lin. Chloroform. Cornea sloughed. V = 0.

11	L. E.	Mrs. R., Ky.	56	Not good. Weighs 346 lbs.	Senile. 1 year.	Good.	Gr. lin. Chloroform. Preliminary iridectomy. V = $\frac{20}{50}$.
12	R. E.	Mrs. W., Ky.	70	Good.	Senile. 2 years.	Good.	Gr. lin. No anæsthetic. V = $\frac{20}{50}$.
13	R. E.	S. B., Ky.	45	Good.	Senile. 3 years.	Good.	Gr. lin. No anæsthetic. V = $\frac{20}{40}$. Operated on at college, and rode in wagon one mile.
14	L. E.	S. B., Ky.	45	Good.	Senile. 2 years.	Good.	Gr. lin. No anæsthetic. V = $\frac{20}{40}$. Operated on at college, and rode in wagon one mile. Nos. 13 and 14 the same patient. Both eyes operated on at the same sitting.
15	R. E.	M. H., Ky.	45	Good.	Traumatic senile. Had undergone calcareous degeneration. 37 years.	Visual field good. Nearly all of cornea opaque. Pupil closed.	Knife plunged through nasal side of cornea, and through matted iris into the vitreous. De Wecker's scissors introduced and an incision made in upper part of matted iris, then withdrawn, and a similar incision made in lower part of membrane. The flap thus made floated back, and the calcareous degenerated lens, which up to this time was not known to be present, presented and was finally removed with iridectomy forceps after many attempts. Vitreous was fluid and flowed freely. Ether was used. Vision = reading J. 15. V = $\frac{15}{200}$.
16	R. E.	May F., Ky.	60	Good.	Senile. 2 years.	Good.	Gr. lin. Ether. V = $\frac{20}{40}$ with + $\frac{1}{16}$. Reads J. 1. Operated on at college and sent fifteen blocks.
17	L. E.	L. McF., Ky.	40	Good. Drinks a great deal of whiskey.	Traumatic. 1 yr.	Good.	Gr. lin. No anæsthetic. Incision and iridectomy done nicely. Cystotome introduced and attempt made to tear capsule, which was very tough. Lens dislocated into vitreous chamber. Finally gotten back into posterior chamber by changing patient's position. Lens finally hooked out by putting cystotome behind it. About one sixth of vitreous lost. Small piece of iron found in lens. Slight reaction followed. V = $\frac{20}{40}$. Reads J. 1.

No.	Record.	Name.	Age.	General Health.	Quality and Duration of Cataract.	Functional Examination.	Method of Operating, Course of Healing, and Result, etc.
18	L. E.	Mrs. S., Ky.	80	Not good. Very feeble.	Senile. 7 years.	Good.	Graefe linear. No anæsthetic. Needled. V = $\frac{20}{50}$. Reads Jaeger No. 1.
19	L. E.	Mr. B., Ky.	50	Good.	Senile. 2 years.	Good.	Gr. lin. No anæsthetic. V = $\frac{20}{40}$. J. 1.
20	R. E.	Mrs. C., Ky.	67	Not good. Palsy.	Senile. 4 mos.	Good.	Gr. lin. No anæsthetic. V = $\frac{20}{40}$. J. 1, with a compound glass.
21	L. E.	Mrs. C., Ky.	67	Not good. Palsy.	Senile. 4 months.	Good.	Gr. lin. No anæsthetic. V = $\frac{20}{40}$, with compound glasses. Reads J. 1.
22	R. E.	Mrs. F., Ind.	70	Good.	Senile. 1½ years.	Good.	Gr. lin. No anæsthetic. V = $\frac{20}{50}$.
23	R. E.	Mrs. F., Ky.	54	Not good.	Senile. 3 years.	Good.	Gr. lin. Ether. V = $\frac{20}{40}$.
24	R. E.	M. D., Ky.	48	Good.	Senile. 8 years.	Good.	Gr. lin. Ether. V = $\frac{20}{30}$. Operated on at college, and sent two miles.
25	L. E.	M. D., Ky.	48	Good.	Senile. 8 years.	Good.	Gr. lin. Ether. V = $\frac{20}{40}$ +.
26	L. E.	Mrs. M., Ky.	76	Good.	Senile. 5 years.	Good.	Gr. lin. No Anæsthetic. Needled. V = $\frac{20}{40}$. J. 1.
27	L. E.	Miss W., Tenn.	67	Good.	Senile. 6 weeks.	Not good. Floating bodies and crystals of cholesterine in right eye.	Gr. lin. No anæsthetic. Hyalitis. V = $\frac{20}{30}$. Fourth week, after exposing eye, a severe iritis set in, resulting in closure of pupil. Iridectomy indicated.
28	L. E.	May F., Ky.	61	Good.	Senile. 1 year.	Good.	Gr. lin. Ether. V = $\frac{20}{40}$., with + $\frac{1}{16}$. J. 1. Same case as No. 16. Operated on at college, and rode fifteen blocks.
29	L. E.	Mrs. T., Ky.	72 70	Not good.	Senile. 2 years.	Good. Right eye lost from extraction of cataract in Cincinnati.	Gr. lin. Chloroform. V = $\frac{20}{40}$. J. 1.
30	R. E.	Nancy T., Ky.		Good.	Senile. 1 year.	Good.	Gr. lin. No anæsthetic. V = $\frac{20}{40}$ +. Operated on at college, and sent one and a half miles.

31	L. E.	J. D., Ohio.	40	Good. Drinks a great deal of whiskey.	Senile. 10 yrs. Calcareous.	Visual field good. Tremulous iris.	Gr. lin. Chloroform. Lens very thin and adherent to capsule. Had to be spooned out. Considerable vitreous lost. V = $\frac{20}{60}$.
32	L. E.	J. E. G., Ky.	59½	Good. Weighs 257 lbs.	Senile. 2 mos.	Good.	Gr. lin. No anæsthetic. Needled two months later. V = $\frac{20}{60}$. J. 1.
33	R. E.	Dr. W. S., Ky.	64	Good. Hemiplegia since 1864.	Senile. 8 years.	Good.	Gr. lin. No anæsthetic. Needled one month later. V = $\frac{20}{60}$ +. J. 1.
34	L. E.	Mrs. C. S., Ky.	67	Good.	Senile. 2 years.	Good. Opacity of cornea.	Gr. lin. Ether. Needled one month later. V = $\frac{20}{60}$ +. J. 1.
35	R. E.	Mrs. E. C., Ky.	69	Good.	4 years.	Good.	Gr. lin. No anæsthetic. Wound too small. Severe iritis. Needled two months later. V = $\frac{20}{70}$.
36	L. E.	Mrs. H. D., Ky.	86	Not good. Very feeble.	4 years.	Good.	Gr. lin. Ether. Preliminary iridectomy four weeks before. Same patient as case No. 10, whose R. E. was lost four years ago. V = $\frac{20}{60}$. J. 1.
37	L. E.	A. B., Ky.	81	Good.	Senile. 1 year.	Good.	Gr. lin. Ether. Preliminary iridectomy. Iridectomy wound had not healed, although it was performed four weeks ago. Anterior chamber empty. Cataract knife tore capsule, so cystotome was not used. Wound too small, so it had to be enlarged by scissors. V = $\frac{20}{70}$. J. 2.
38	R. E.	P. R., Ind.	67	Good.	Senile. 6 mos.	Good.	Gr. lin. No anæsthetic. Operated on at college, and sent in carriage six blocks. Left eye operated on at same time. Needled. V = $\frac{20}{60}$ +
39	L. E.	P. R., Ind.	67	Good.	4 months.	Good.	Gr. lin. No anæsthetic. Conjunctiva folded over edge of cornea, so as to cause counter-puncture to be made too far back. Needled. V = $\frac{20}{60}$ +. Rode six blocks after operation.
40	L. E.	A. H., Ky.	70	Not good. Palpitation and indigestion.	Senile. 3 years.	Good.	Gr. lin. Ether. Rode one and a half miles after operation. V = $\frac{20}{70}$ +. Cannot read.

No.	Record.	Name.	Age.	General Health.	Quality and Duration of Cataract.	Functional Examination.	Method of Operating, Course of Healing, and Result, etc.
41	L. E.	J. B., Ky.	72	Good.	Senile. 1 year.	Good.	Graefe linear. Ether. Rode one mile after operation. V = $\frac{20}{40}$ +. Cannot read. Right eye operated on at same time.
42	R. E.	J. B., Ky.	72	Good.	Senile. 6 mos.	Good.	Gr. lin. Ether. Rode one mile after operation. Left eye operated on at same time. Conjunctiva rather redundant, and overlapped sclero-corneal junction, causing counter-puncture to be made too far back. Considerable hemorrhage. Iris pushed in front of knife and was cut. V = $\frac{20}{40}$ −. Cannot read.
43	R. E.	R. M., Ky.	72	Not very good.	Senile. 6 months.	Eye glaucomatous. Glaucoma absol., left eye.	Gr. lin. No anæsthetic. Lens escaped, with some vitreous, as soon as incision was finished. No iridectomy made. Iritis with closure of pupil followed. Iridectomy. V = $\frac{20}{100}$. J. 2.
44	R. E.	Mr. D., Ind.	73	Not good.	Senile. 1 year.	Good.	Gr. lin. No anæsthetic. Iritis seventh day. Leeched three times. Needled. V = $\frac{20}{40}$. J. 1.
45	L. E.	Mr. Z., Ky.	54½	Good.	Senile. 3 months.	Good.	Gr. lin. Ether. Operated on at college, and rode one mile after operation. V = $\frac{20}{40}$. Reads Snellen No. 1.
46	R. E.	A. J., Ind.	75	Good.	Senile. 2 years.	Good.	Gr. lin. Ether. Rode ten blocks after operation. Iritis sixth day. Healing slow. V = $\frac{20}{50}$. J. 1.
47	R. E.	N. W., Ind.	70	Feeble.	Senile. 6 months.	Good.	Gr. lin. No anæsthetic. V = $\frac{20}{40}$ +. J. 1.
48	R. E.	J. B., Ky.	91	Not good. Rheumatic. Extremely choreic.	Senile. 2 years.	Good.	Gr. lin. Chloroform. This case was as perfect a representation of second childhood as I ever saw. No control over muscles whatever. V = $\frac{20}{100}$. J. 3.

49	L. E.	M. G., Ky.	70	Good.	Senile. 7 years.	Good.	Gr. lin. No anæsthetic. Rode one mile after operation. V = $\frac{20}{60}$. J. 1.
50	R. E.	M. S., Ky.	61	Good.	Senile, calcareous. 60 years.	Visual field good. Leucoma adhaerens.	Gr. lin. No anæsthetic. In this case it was my intention to do a preliminary iridectomy, but rupturing the lens capsule with either my knife or a pair of back-toothed iridectomy forceps, and the lens presenting at the wound, I enlarged the latter with De Wecker's scissors and extracted the lens. No reaction scarcely. V = $\frac{15}{200}$. J. 6.
51	R. E.	E. S., Ky.	64	Good.	Senile. 6 months.	Good.	Gr. lin. No anæsthetic. V = $\frac{20}{40}$. J. 1.
52	R. E.	Mr. H., Ky.	65	Not good.	Senile. 6 years.	Good.	Gr. lin. No anæsthetic. Iritis with closure of pupil. Perception of light good. V = $\frac{1}{\infty}$.
53	L. E.	N. J., Ky.	59	Not good.	Senile. 1 year.	Good.	Gr. lin. Ether. Suppuration of cornea. V = 0.
54	L. E.	Mrs. A., Ky.	70	Not good.	Senile. 10 years. Hypermature.	Not good. Gives a history of hyalitis. General opacity of cornea.	Gr. lin. Ether. Healing process perfect up to third week, when iritis set in, resulting in closure of pupil. Good perception of light. Iridotomy indicated, but fear it would not do much good on account of opaque cornea. V = $\frac{1}{\infty}$.
55	R. E.	P. O. C., Ky.	47	Good.	Senile. 1 year.	Good.	Gr. lin. No anæsthetic. Rode six blocks after operation. V = $\frac{20}{40}$. J. 1.
56	R. E.	C. K., Ind.	76	Good.	Senile. 1 year.	Good.	Gr. lin. No anæsthetic. V = $\frac{20}{40}$. J. 1.
57	R. E.	A. M. B., Ind.	68	Good.	Senile. 9 years.	Not good. Synechiæ. Opacity of cornea. Very small portion of cornea clear.	Gr. lin. No anæsthetic. V = $\frac{20}{200}$.
58	L. E.	Mrs. S., Ind.	57	Not good. Hemiplegic.	Senile. 6 mos.	Not good. Myopia.	Gr. lin. Chloroform, but was not pushed far on account of bad heart. Before iridectomy could be performed, lens and vitreous escaped. V = 0.

No.	Record.	Name.	Age.	General Health.	Quality and Duration of Cataract.	Functional Examination.	Method of Operating, Course of Healing, and Result, etc.
59	R. E.	Mrs. M., Ky.	49	Not good.	Senile. 5 years.	Good.	Graefe linear. Ether. V = $\frac{20}{70}$—.
60	L. E.	S. J., Ky.	74	Good.	Senile. 1 year.	Good.	Gr. lin. No anæsthetic. Walked, and rode on street car one mile. V = $\frac{20}{30}$. Cannot read.
61	R. E.	S. J., Ky.	74	Good.	Senile. 1 year.	Good.	Gr. lin. Muriate cocaine. V = $\frac{20}{30}$. Same as 60. Double extraction.
62	R. E.	A. J.	81	Good.	Senile. 2 years.	Visual field good. Stricture of tear duct.	Gr. lin. Muriate cocaine. V = $\frac{20}{40}$. Rode in carriage one mile.
63	R. E.	Mrs. F., Ky.	76	Not good. Lost 40 lbs. in two weeks.	Senile. 6 mos.	Not good.	Gr. lin. Muriate of cocaine. Iridectomy three or four years ago; a severe iridocyclitis suppurativa set in the second day, lasting six or eight weeks, leaving pupil almost closed. Large objects can be seen. Inflammation not yet subsided. Patient still under observation. V = ?

The result in these twenty-four cases is as follows: $V = \frac{20}{30}$, three cases; $V = \frac{20}{40}$, seven cases; $V = \frac{20}{50}$, eight cases; $V = \frac{20}{70}$, four cases; $V = \frac{20}{100}$, two cases. Of these twenty-four cases, six of them (twelve cataracts) were double (right and left eye at once) extractions.

Of the three cases in which there was perception of light, one took chloroform, one ether, and in one I used muriate of cocaine. Of the three cases with vision zero, two took chloroform and one ether.

I wish it understood that the cases reported here are not selected ones, but given as they came in.

To draw my average of success from them just as given here appears to me unjust, for several reasons. Taking vision $\frac{1}{10}$ as a success, I lost eight cases out of the sixty-three, or one in $7\frac{7}{8}$. The two cases which received only $\frac{15}{200}$ I consider more of a success than any of those which received $\frac{20}{30}$, because of the condition of the eyes before operated upon. One of them was a patient whose left eye was shrunken to a button. His right eye had an exceedingly small portion of clear cornea; the pupil closed, or no signs of a pupil; a calcareous lens, that had to be removed with forceps. The eye had been in this condition for thirty-seven years. Besides this, he was deaf, which complicated the after treatment.

In the other I had opacity of cornea, with only a small portion of clear cornea, a hypermature cataract of sixty years' standing. Of the three cases of perception of light, two of them promise good results from a second operation—say, iridotomy. These are unfinished cases, consequently I think should be left out. The other one of the three was one of little promise, on account of a general opacity of cornea, and hyalitis. Leaving out, then, these five cases, which I think is but fair, I have three losses in fifty-eight extractions, or one in $19\frac{1}{3}$.

In the beginning of this paper I referred to the after-treatment, especially to posture for the first few days after extraction. I am inclined to believe that we keep our patients in bed too much. In coming to this conclusion, it is true I have but the twenty-four cases to draw from.

These twenty-four cases are all that I have operated upon at the University of Louisville. All of them, as I said before, had to either ride or walk, either immediately after the operation or the next day, from six blocks to six miles. Of these twenty-four extractions, twelve of them (six cases) were double; none of them were lost. Of these twenty-four, about eighteen had extremely poor accommodations after the operation. Many of them had not even a dark room. Four of them, no physician saw after the operation, until they returned to me the third or fourth week. These cases were not picked cases. Usually badly fed, and not near so promising as the others. Yet they show a much better result. As I before stated, I recognize the smallness of the number. Very few of the many traumatic cases I have, in many of which the trauma is much greater than that resulting from cataract-extraction, are put to bed, or even stay in the house. Most of them are treated as office patients, reporting there every one, two, or three days as I think necessary. Many of these cases of trauma are in elderly people.

When I can, I put my cases on a little preliminary treatment—say calomel and quinine,—with a good night's rest. When possible, I think the urine should be tested by a competent man.

A word as to the muriate of cocaine. The three cases in which I used it said they suffered none. Two of them were extremely nervous subjects; could not possibly have stood it without either the cocaine or some general anæsthetic.

Antiseptics were used in none of my cases further than washing instruments in either Listerine, alcohol, saturated solution of boric acid, or solution of hyd. bi-chlo., 1 to 2,000.

Preliminary iridectomy in Nos. 11, 36, 37, and 63. Kept no record of size of iridectomy. Always aimed to make it about two thirds the size of the section. Puncture and counter-puncture.

Puncture—in all, just at sclero-corneal junction; tried to make counter-puncture at same point opposite. Counter-puncture too far back in cases 39 and 42.

Apex of section—kept no record of it. Aimed to have it at sclero-corneal junction.

Opening of capsule. No record kept as to point of rupture. Aimed to make it peripheral in a majority of the cases, especially so in the last two or three years. Cystotome used in all cases, except 15 and 37, where capsule was ruptured by knife; No. 50, where it was ruptured by either knife or iridectomy forceps; and in 43 and 58, where it was ruptured by the action of orbicularis palpebrarum and recti muscles.

Expulsion of lens—whether instrumental or not. Lens expelled in all cases, except those mentioned below, either by pressure of spoon over edge of lens opposite corneal section, or with one spoon as above, and another over scleral edge of wound. In case No. 15, the lens was removed with iridectomy forceps; in case No. 31, it was spooned out; in case 17, it was hooked out with a cystotome; in Nos. 43 and 58, they were expelled by the orbicularis palpebrarum and recti muscles.

Cleansing. I always aim to leave wound clean, and no cortical matter behind; often remove cortical matter by palpebral pressure, sometimes by means of a Daviel's spoon introduced into anterior chamber.

Bandaging. In all of the cases, I first applied a bit of soft linen, then absorbent cotton or picked lint, holding them in place by a flannel roller bandage. In the last six cases, I placed over this a shade or curtain, made of a couple of folds of dark cloth, such as I use after the bandage is removed.

SYMPATHETIC OPHTHALMIA—A CASE OF RECOVERY WITHOUT OPERATION, AND A CASE OF PECULIAR ACTION, WITH RECOVERY AFTER THREE OPERATIONS.

By P. D. KEYSER, M.D., Philadelphia, Pa.,

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IT is the accepted fact that enucleation of the injured or primarily affected eye is the best and proper treatment of sympathetic ophthalmia, and also in many cases, especially traumatic, where sympathetic affection might take place. But as to the time and necessity of the operation there is much difference of opinion in the profession, and only from records of cases can we learn the different characteristics of this serious trouble and its treatment.

F. P., aged twelve years, was brought to my clinic January 15, 1881, with a small puncture through the corneal edge of the right eye, caused by the end of a piece of wire springing suddenly and sharply against the ball. The iris had prolapsed, and was attached in the wound. There was pericorneal injection and iritis, with the vision reduced to light and moving objects only. The injury occurred the day after Christmas, just three weeks previous to the time of my seeing him. The left eye was sympathetically affected by ciliary injection, discoloration of the iris, photophobia, pupil slightly dilated and inactive, and vision cloudy.

On examining the right eye carefully, I feared to meddle with it at present, as the position of the wound of the cornea and prolapse of the iris were so close to the ciliary edge that it was impossible to cut through to loosen the attachment or make an iridectomy ; and to enucleate was, from the degree of sympathetic

affection of the other eye, I thought too late; so the only thing was to admit him to the hospital and treat him expectatively. He was put in a dark room with a black bandage over the eyes to exclude all light; given internally quinine and belladonna, while a weak solution of sulphate of atropia (gr. $\frac{1}{4}$: ʒ i.) was instilled into the eyes once daily,—in doing which the eyes were opened but a moment in the light of a candle. This treatment was continued five weeks, when all irritation and inflammation in the eyes had passed away, and he was discharged from the institution with the right-eye pupil irregular, being drawn up toward the point of adhesion to the corneal cicatrix, and V = $\frac{4}{24}$. The left eye V = $\frac{6}{6}$. When discharged I told him to return on the first sign of any trouble in either eye, but he has never called in these four years past.

It has been a mooted question for a long time among ophthalmologists as to what ought to be done in such cases. Prompt enucleation of the injured eye by many, while some few have advised waiting with expectative treatment, and have reported cases of recovery. Others again suggest a broad, free iridectomy in both eyes, but in this case it could not be made on the injured eye, and furthermore such procedure has not been successful in my hands in saving the other eye.

The following case was not protected from danger by a free iridectomy and removal of the prolapsed iris, although performed soon after the injury:

E. C., aged four years, was brought to me October 2, 1880, with an incision on the outer side of the cornea of the right eye, near the sclero-corneal edge, which was received that morning from a pebble shot from a rubber gun. The incision was 2 *mm.* in length, perfectly straight and clean, as if made by a knife, through which the iris was prolapsed the size of a large mustard-seed. Neither capsule nor lens was injured. Eserine solution (gr. iv.: ʒ i.) was dropped in the eye every fifteen minutes for an hour to get a strong contraction of the iris so as to reduce the prolapse, which, not taking place after a couple of hours, the child was etherized, and finding the reduction could not be made by pushing the iris back into the anterior chamber with a Wecker's spatula, I considered it best to remove it by making a free iridectomy. A good piece of the iris was removed and the cut

edges and angles properly freed from the corneal wound and replaced.

For two weeks I saw her regularly, and the eye appeared to be doing splendidly; inflammation passing off and vision good in the eye. Then she was not brought to see me for two weeks, when I noticed that she did not open her eyes, and held her head down to shield the eyes from the light. Upon opening the lids I found the left eye seriously sympathetically affected. There was marked ciliary injection, iris discolored, photophobia with great lachrymation, aqueous humor slightly discolored, edges of the pupil had the appearance of thin lymph being thrown out, so much so as, with the discoloration of the aqueous, to prevent clearness of the fundus. The ciliary region was painful on pressure. The vision was quite dim, and the little patient saw better out of the injured eye. She had not previously nor did she then complain of any pain. The whole trouble came on without her parents noticing it. The mother had been sick and could not bring her to see me, while the father was at his work. Noticing, however, that she did not see so well for several days past and kept in dark places, her father determined to leave his work and bring her to me. The right (injured) eye looked very well; it was quiet and clear, but on close examination I found that the upper edge of the iris had washed back into the corneal incision in healing, and was there attached in the cicatrix, causing a pulling on the tissues of the iris and ciliary body.

It was too late to enucleate the injured eye, and then it had just now the better vision, so that it might eventually be the only one retaining sight. On consultation with my colleagues in the Wills' Eye Hospital, the prognosis was declared hopeless; but they agreed with me that it was too late and would be unjustfiable to remove the right eye then. I therefore proposed to free the iris from its attachment to the cornea, to see what it would do, and admitted her at once for the operation and treatment. Under the anæsthetic of ether, a v. Graëfe's cataract knife was passed in through the cornea so as to go over the point of iritic attachment and incise it through as the knife was made to cut its way out of the cornea. As soon as this was done, the iris was grasped by the forceps, drawn out, and again cut off. Atropia solution was instilled and both eyes were completely covered with a thick, black Liebreich bandage, so that not a ray of light could penetrate anywhere. Unguentum hydrargyrum was rubbed night and morning on the left temple, and small doses of quinine and belladonna were given three

times a day. A collyrium of atropia (sulph. gr. $\frac{1}{4}$: $\frac{3}{3}$ i.(was instilled twice daily. She was kept in a dark room and every precaution was taken to prevent any light from striking the eyes, except for a moment from a candle when instilling the atropia. The room she was confined in was one of the large wards of the hospital, so that her mother who remained with her could walk her about for exercise and amusement. After two weeks of such treatment, the left eye began to look better. The pupil dilated somewhat, and the ciliary injection was less. The right eye healed from the last operation and remained quiet. On the fourth week no lymph was to be seen in the pupil of the left eye and it was largely dilated, the ball free from any inflammation. As soon as the lids were opened the little patient exclaimed that she could see. The right (injured) eye, however, did not look so well. There was considerable pericorneal injection, and sight much dimmer. In a few days the sight of this eye was entirely lost and the pericorneal injection had much increased, while the left eye, or sympathetically affected one, had cleared up perfectly; there was not a sign or trace of inflammation about it; the pupil was dilated *ad maximum*, with no adhesions, and sight returned.

Thinking now was the time for operative interference, to be on the safe side and to save the left eye from any recurrent inflammation, I advised enucleation of the injured eye at once, and it was done that day. It may not have been necessary, but I thought it prudent to do so, and six weeks after, she was discharged with perfect vision in the remaining eye, and it has remained so ever since without any return of inflammation.

The enucleated ball was cut through its antero-posterior axis in the horizontal meridian, incising the corneal cicatrix. The iris was found free from any adhesion, but thickened at the ciliary border and attached to quite a formation of lymph that was lying on the ciliary body and extending along the upper line of the incised iris, while the lower line of the iridectomy was perfectly free.

AN ACCIDENTAL DIVULSION OF A PTERYGIUM LEADING TO AN IMPROVEMENT IN THE REGULAR OPERATION.

By A. E. PRINCE, M.D., of Jacksonville, Ill.

(*With a wood-cut.*)

CONCERNING the separation of the corneal portion of a pterygium, within the limits of my research, the results are scarcely what one should hope to obtain.

First, in the operation of grasping the growth with forceps and dissecting it from the cornea with scissors, its complete removal, when extensive, without leaving remnants of opaque material, is practically impossible.

Secondly, in the efforts to separate it from the cornea with a sharp knife, the imperfection of human dexterity leads either portions of the deeper strata of the pterygium to be left, to atrophy into opaque tissue, or the superficial layer of the substantia propria to be wounded, by the cutting edge, resulting too often in facets or opacities.

In the hope of being able to present a consideration of value in the treatment of these extreme cases, involving the pupillary area of the cornea, is offered a summary of my notes of an accident which occurred about two years since.

In the case of a middle-aged man whose left eye was defective from injury, a fleshy pterygium extended from the nasal side to the temporal margin of the pupil, cutting off direct vision except when under the influence of a mydriatic. He was told that the removal of the growth could not be effected without leaving opacities on the already invaded cornea, and that to secure the

best possible vision an iridectomy would probably be required; but as the growth had already covered the pupil and was still actively progressive, an attempt at its removal was imperative. Having a very wide base the excision of so much conjunctiva would certainly have limited abduction to a prejudicial degree; hence it was determined that Knapp's modification[1] of Desmarres' transplantation operation[2] would give the best results, and it was accordingly undertaken.

Following my usual custom, a small strabismus hook was passed under the pterygium near the corneal margin and such traction made as would lift the pterygium from the surface of the sclera and facilitate its separation from the bordering conjunctiva, as well as the preparation for its transplantation, the corneal separation being left to the last. The lateral incisions to the base of the pterygium were made, and then, with Wecker's scissors extended upward and downward into the retro-tarsal folds, and sutures inserted into the angles, to receive the divided apex.

Thus far the strabismus hook had been held by an assistant and the steps of the operation had been uneventful when, by an unskilful act, the hook was *torn from its position and the entire corneal portion of the pterygium separated from its underlying surface.*

An inspection converted solicitude into satisfaction, for, in place of the usual opaque remnants and corneal irregularities, was seen a transparent surface and a well-defined pupil.

The appearance was that of an extensive epithelial abrasion, corresponding to the area of the unexposed cornea.

Inasmuch as Arnold's researches[3] had demonstrated the facility with which corneal epithelium, under favorable circumstances is regenerated, this condition was not looked upon as unfavorable.

The apex was then divided by a longitudinal incision extending to the caruncle, and the apex of each half transplanted into the incision prepared for its reception, and after the requisite sub-conjunctival dissection the free edges were united in the usual manner in the median line.

[1] Knapp: "Pterygium Operation durch-doppelte Transplantation," *Graefe's Arch. f. Ophth.*, 1868, Bd. xiv., Abth. 1, p. 267.

[2] Desmarres: "Traité des Maladies des Yeux," t. ii., p. 169.

[3] Arnold, *Virchow's Archives*, about 1868.

With directions to keep the eye constantly moistened with a cold compress soaked in a half per cent. aqueous solution of pure carbolic acid, he returned to his home in Winchester to continue under the observation of his family physician.

Some months later he returned, to my surprise, with a perfectly transparent cornea, and though it is to be regretted that an unavoidable delay prevented the minute inspection of his cornea and measurement of his vision, in the interval of which he disappeared, I regarded it as the most perfect result that had ever come to my notice.

Since that time, it has fallen to my lot to operate twelve times in this manner, and it has been my observation, as stated by Schreiter in his inaugural dissertation "Untersuchungen über das Flügelfell,"[1] that there appears to be no intimate connection between the pterygium and Bowman's membrane, which permits the growth to be removed *en masse*, except when it has been associated during its formation with corneal ulceration, in which case we might expect the condition illustrated by Alt[2] of a wedge-shaped penetration by the connective tissue of the pterygium, into the substantia propria of the cornea, in which condition one would expect resistance to the effort at divulsion.

In my experience, the results have been so gratifying that, with the accompanying hook, having a cutting point to

favor its introduction and a wedge-shaped edge to facilitate the separation, we submit the operation to the judgment of the profession, hoping that the acknowledgment of the accident may have an educational value.

[1] *Graefe-Saemisch. Augenheilkunde*, Bd. iv., p. 138.

[2] Alt: "Lectures on the Human Eye," 1880, cut 12, p. 30.

THE TREATMENT OF SUPERFICIAL AND INFILTRATING VARIETIES OF PAVEMENT EPITHELIAL CARCINOMA OF THE EYELIDS.

By ROBERT SATTLER, Cincinnati, O.

THE importance of epithelial neoplasms of the palpebral area, entitles them to a most careful consideration, principally on account of their well-known progressive and destructive tendencies. Interference of some kind, to prevent almost inevitable dangers from resulting deformity of the lids and defective protection of the globe, is imperative in those cases in which the history and local alterations of the growth render a successful arrest or removal probable. In other more advanced cases, with extensive infiltration and destruction of tissue, in which the local changes preclude the prospects of a radical disappearance, at least relief from suffering and perhaps a retardation of an otherwise uninterrupted progress can be effected by prompt appropriate, measures.

The comparative frequency of epithelial growths in this locality, among persons predisposed by age, heredity, and other causes to their occurrence; the almost uniformly insignificant beginning and frequently overlooked progress; the well-known latent or non-progressive tendency, comprising often a period of years and followed by a sudden and uninterrupted destructive advance, are all well established characteristics which can only receive a passing reference. For the same reason the clinical, pathological and histological features of the different forms of pavement-cell, cylindrical, and glandular cell carcinoma are not referred

to, as it is the purpose of this communication to refer to the operative treatment of these treacherous neoplasms, and to give the results of personal observation and experience in the management of the most frequent forms of the disease in this locality, *i. e.*, the superficial or lobulated, and the infiltrating or tubulated forms of pavement-cell epithelial carcinoma.

The methods to effect the removal of these growths are many and various, and include the caustics, the knife, thermo-, galvano-, and the actual cautery. That all these methods, either separately or combined, have in a large proportion of cases, accomplished the purpose for which they were resorted to, must be admitted, but on the other hand it must also be conceded that many and perhaps the larger proportion of cases have eluded successful treatment by the above means, even though they were clearly indicated and were resorted to early, promptly, and thoroughly.

Unsatisfactory observations, the result of a limited personal experience, induced me to test more extensively the value and merits of the method of scraping, suggested and practised by Prof. Volkmann, for the arrest and treatment of lupus nodules and ulcers, but also resorted to by him and other German surgeons for the removal of epithelial tumors.

Among the first cases observed was one of a superficial lobulated epithelioma of the lower lid, which had defied the use of caustics,—zinc. chlor., acid. monochloroacet., arsenic pastes, etc. The patient persistently refused excision, which it may be inferred, was at once proposed when she was first examined. Impressed with the inefficacy of caustic agents and the needless pain their application produced, I resorted to the plan of scraping the infiltrated area with Volkmann's steel spoon or scoop, without informing my patient of its surgical nature. The scraping was thoroughly done and the result was excellent. Seven years have elapsed and no return has been noticed. The neoplasm was situated in the lower lid, was oval in shape, and about one and one half *cm.* long and one *cm.* broad. Its upper edge approached to within four *mm.* of the lid margin,—the outer two thirds of which were everted by the traction and weight of the growth,—and it extended obliquely toward the centre of the cheek. The patient was forty-six years old and in good general health. She had noticed an

"irritable wart," which was situated in the site of the affected area, for eight or nine years, but only within the last fourteen or sixteen months had it increased in size, accompanied by a tendency to ulceration and local stinging and discomfort. The histological structure of the growth consisted of closely packed groups of flat or pavement epithelial cells imbedded in a vascular stroma, traversed by cicatricial bands and warts or fringe-like projections.

The cicatrix which followed this radical scraping was smooth and superficial. The ectropium which existed before the operation, was made to disappear effectually by stretching the scar.

In the second case, a man, æt. fifty-two, the growth was of more than ten years' standing. It had invaded the outer two thirds of the right upper lid and almost the entire border of the lower lid. Necrosis of certain parts, indolent ulcerations covered with crusts and ectropium, were prominent features of the infiltration. The cutaneous area of the right lower lid, side of the nose, malar region, and cheek, had been the seat of destructive ulceration, which had transformed this region into a thin, clean, shining white surface. At its lower termination, a wall of waxy nodular elevations, concealing foci of ulceration was arranged in a semicircular manner, presenting all the characteristics of both the progress and results of a rodent form of ulceration, which had started from and was engrafted upon the specific growth.

Thorough excision, combined with a plastic operation was resorted to without delay. No reaction followed, and the immediate result of the operation was favorable. In four months a return in the outer and also the inner portion of the upper lid, near its border, was noted. Both points were speedily excised. After this operation, without a plastic to cover the defect, only about one fifth of cilia-bearing lid border of the upper lid remained ; the entire border and adjoining region of the lower lid had been removed. At the same time, the semi-circular wall of nodular waxy elevations was attacked and thoroughly scraped and excavated. Several attempts followed the first one, and accomplished an arrest of the ulcerative process in this region. In the course of five months fresh foci of the neoplasm developed, particularly near the inner canthus. The steel scoop was from this time exclusively resorted to to combat the destructive tendency of the disease, to prevent greater deformity, and to relieve pain. Not alone was the removal of the infiltrated portions more easily accomplished, but it was also attended with, less pain and reaction

afterwards, and was followed by a less dense and more elastic cicatricial covering. It did not or could not completely arrest the disease, but it opposed and modified its progress in a variety of ways, and was at the advanced stage of the growth more applicable and effectual than the knife or caustics.

A third case also demonstrated to me the advantage of the scraping over the use of the knife ; yet I venture to say that in this locality the knife would have been the choice of any surgeon to effect the removal of the growth.

A clergyman, aged fifty-six, sought relief from a chronic dacryocysto blennorrhœa. In treating the tear-sac trouble, I discovered a suspicious eroded warty growth in the left posterior auricular region. The patient was aware of its presence, and said it had existed for years, and that at times it caused him great annoyance. Microscopic examination revealed its epithelial nature. Immediate removal was advised, to which the patient willingly assented. The growth was about $1\frac{3}{4}$ *cm.* long and $1\frac{1}{4}$ *cm.* broad ; it had invaded only the skin. It was circumscribed by a deep incision and removed, together with a broad border of healthy skin. Feeling secure, on account of the liberal excision, that this would end the neoplastic formation, I was not a little surprised to find, after four months—the disease for years antedating the operation having shown no special tendency to advance,—a return in connection with the cicatrix of the first operation, and also a new infiltration of skin in its vicinity. Immediate excision with most liberal attachments of healthy skin was practised. Complete union and no reaction followed. After the lapse of eight months, not alone were points of infiltration to be discovered in the scars of the two former operations, but numerous new points existed in addition. The knife was abandoned, the scraping-spoon being used in its stead. The ease of manipulation, diminution of pain, and absence of reaction impressed me so favorably, and accomplished so completely the disappearance of this troublesome affection, that I determined to give it an extensive and systematic trial, in all typical and suitable operative cases of epithelioma, in dispensary practice.

From March, 1878, all cases in which operative interference was indicated were treated according to this method. During this period thirteen cases were observed. Eight belonged to the superficial and five to the deep or infil-

trating variety. In nine patients the scraping method was exclusively practised; in three it was combined with excision. In some a single scraping sufficed; in others several were necessary to bring about an arrest of progress or an effectual disappearance. All were examined microscopically, and were found to belong to the superficial lobulated and infiltrating or tubulated variety of pavement-cell or flat epithelial carcinoma.

The eight cases belonging to the superficial variety could be subdivided, according to their most distinctive alterations, into cicatricial (2), necrotic (3), warty (2), and rodent (1); of these, four were situated on the lower lid, one at the inner canthus, involving the caruncula lachrymalis and semilunar fold, one at the outer canthus, involving also the lower lid, and two on the side of the nose, extending over the tear-sac region. All these cases were treated by the scraping method, and all recovered. Three of this number had received previous treatment by excision and caustics.

Five belonging to the infiltrating, presented all the histological characteristics of this variety; these were subdivided into the simple tubulated (2), papillomatous (2), and rodent (1).

Four were treated by excision and scraping combined. In one case exenteratio orbitæ was necessary, and most effectual work was accomplished by the scraping spoon.

The tubulated varieties involved the lower lid and burrowed along the inner wall and floor of the orbit. In both cases the disease began in the lower lid; the first[1] was excised and thoroughly scraped, and up to the present time, a period of several months, developed no activity.

The second case began in the lower lid, destroyed it entirely, invaded the upper lid, and pushed its destructive course along the inner wall of the orbit and attacked the globe. This case had been in the hands of competent surgeons, and also so-called cancer quacks. It would be difficult to say what had not been done for this poor woman. When she applied for relief there was so much infiltration

[1] This case came to the clinic during my absence, and was treated during its entire progress by Dr. S. C. Ayres.

near the inferior margin of the orbit and on the globe, that to facilitate the operation I excised this mass and carefully detached with a pair of scissors the exuberant tissues adhering to the globe. After this the knife was not again used, and the remaining portions were removed by the aid of the scraping spoon, even from the sclera. The scraping was repeated in different parts of the growth, at least twelve times during a period of almost three years. During this time the patient enjoyed comparative freedom from suffering, danger from hemorrhage was lessened, enucleation of the extensively infiltrated and adherent globe was not necessary, and the advance of this malignant neoplasm was arrested and markedly modified. Each scraping made to arrest some fresh or recent manifestation of the disease was attended and followed by the best possible results under the hopeless circumstances. Recently, however, either in consequence of latent inherent activity of the growth, or the result of impaired health, physical exhaustion, or age, it has again developed most startling activity.

The papillomatous variety was treated by exenteratio orbitæ and thorough scraping of the bony walls. The globe and all the tissues of the orbit, including both upper and lower lids, were involved in the disastrous process.

For eight months no return was observed, and the patient was improved in every respect; a recent communication, however, refers to the not unexpected but, certainly delayed return of the disease. The second case, the disease being not so extensive and with less malignant tendencies, was more favorably influenced by the scraping method of treatment.

The rodent variety was an unusually extensive and disastrous illustration of the disease. Interference was not deemed indicated or justifiable. All the structures of the orbit had succumbed to the destructive process, the soft parts over cheek, nose, frontal, temporal, malar, and anterior auricular region had disappeared, and in addition the bony structures were extensively and hopelessly infiltrated.

As already stated, the scraping method, by the aid of sharp steel scoops or spoons, of variable size and shape, was

the method, even in the infiltrating forms, which was relied upon to bring about an arrest or a complete disappearance of the disease. If it is stated that excision was performed, it was only resorted to to render the removal of large areas of infiltration more speedy. The attempt, however, to eradicate, or at least arrest, the disease in those portions which were accessible to the influence of the instrument, was made by the former method.

The presence of microscopic foci, notably in the glandular structures of the skin or in the connective tissue of the subcutaneous region, or the lymphatics, etc., surrounded by areas of perfectly healthy tissue, would, of course, oppose a complete removal of these concealed and not to be discovered hiding-places of the disease, as effectually as the knife or caustics. In this locality particularly, although the rule of operative art and experience is not to spare tissue, owing to the well-known treacherous characteristics of these growths, it is a point of paramount importance to save as much healthy tissue as possible, and avoid dense scars on account of the unsightly deformity and dangers to the globe. Therefore, a reckless excision is as unjustifiable as a too cautious one. For this reason this method appears to me particularly applicable to this locality. It is easy of accomplishment, little or no reaction is to be feared, and the adjacent healthy or non-infiltrated regions are not removed, and the defect after the scraping is not much greater than the infiltration before it.

All the cases referred to, with the exception of one, were observed in dispensary practice, and if at first the method was not extensively resorted to in private practice, it was because the trust and safety in the removal by the aid of the knife was too secure in my mind to permit of its being supplanted by a method not extensively practised and arousing doubt and fear as to its real efficacy. I may add that after it had been thoroughly tested, and its advantages established by the observations referred to, and in addition corroborated by a number of cases in private practice, it is now looked upon as a most valuable and reliable method of management; in many cases, without doubt, far superior to

excision, caustics, etc., and in others, again, inferior to the latter methods. Yet it is applicable in so many cases, that it deserves recognition and a trial where other methods have failed, or where the knife and caustics are no longer of advantage, and also in a large number of cases where it may be resorted to in conjunction with them.

My observations prompt the following suggestions: When thoroughly accomplished the scraping method is of particular advantage and superior to the knife, and, therefore, should enjoy preference and its principal application in the management of the different varieties of *superficial lobulated pavement* epithelial cancer of the lids or adjoining regions, for the following reasons:

a. The defect of tissue after is not greater or deeper than the infiltrated area at the time of operation.

b. Little or no danger from inflammatory reaction.

c. The formation of a smooth superficial covering of the excavated area, which on account of its pliable and elastic nature interferes least with the protective function, and secures also better adaptation of the altered lid to the globe.

d. The invaluable advantage of being able to observe the cicatrized base of the recently affected area, and, therefore, discover easily and early any reproduction of the growth.

e. It is rarely necessary to resort to plastic operations.

Other advantages are: the ease and readiness of performance of the method, less pain during and after the operation, avoidance of dense or extensive scars and those dangers which attend the healing of the wounds.

In the *deep or infiltrating forms* it is of the greatest advantage when combined with cautious excision. It can be resorted to alone with prospects of success only in a limited number of cases of this variety of the disease.

This method, either alone or combined with excision, has the valuable and not to be overestimated advantages:

a. That it accomplishes the removal of part or parts of the growth with the least sacrifice of tissue.

b. That it is as safe and more easily accomplished in many cases.

c. In those cases where excision promises little or nothing it should have the preference, because it accomplishes as good a result with less pain, hemorrhage, and deformity.

d. In those cases where excision is clearly indicated, and rational promptings for its selection exist, it may be advantageously combined with it, as it can remove traces or concealed foci of infiltration which are beyond the scope of the knife.

ON THE USE OF THE ACTUAL CAUTERY IN THE TREATMENT OF ULCUS CORNEÆ SERPENS.

By Dr. EMIL GRUENING, New York.

THE mycotic origin of the ulcus corneæ serpens is generally conceded at the present day, and the therapeutic indications derived from this view are either the removal of the noxious substance or its destruction *in situ*. As a radical destroyer of the infecting material the actual cautery commends itself to our consideration. Deprived of its heroic nature by the anæsthetic action of cocaine, the actual cautery no longer fills the heart of the patient with terror, and is practicable alike in the dispensary and the hospital service.

At the January meeting (1885) of the N. Y. Ophthalmological Society, the writer reported seven cases of ulcus corneæ serpens treated with the actual cautery under cocaine, and to this number he can now add three new cases. Of these ten cases seven can be classified as belonging to the incipient stage of ulcus corneæ serpens, showing a well-marked arc of propagation, two as belonging to a more advanced stage with a complete zone of propagation, and one as being hypopyon keratitis with considerable destruction of corneal tissue and blennorrhœa of the lachrymal sac. As a preliminary step in the treatment of these cases, the nose and lachrymal sacs were examined and thoroughly cleansed whenever necessary. The eyes were washed with a saturated solution of boracic acid, atropinized, and cocainized until corneal anæsthesia ensued.

The point of a delicate platinum probe provided with a suitable handle was brought to a red heat in a spirit lamp placed behind the patient. The lids were separated and the eyeball steadied with the forefinger and middle finger of the left hand, while the right hand lightly applied the red-hot point to the arc or zone of propagation. In no instance did the patient suffer any pain. In the seven cases of incipient ulcus corneæ serpens a single application of the cautery sufficed to stay the destructive tendency of the disease. Under the compressive bandage applied after the cauterization the eschar was thrown off within twenty-four hours, leaving a clear ulcer, which in all these cases healed in less than a week's time. The two cases belonging to a more advanced stage of the disease were not so manageable. In the first case it was necessary to apply the cautery three times in as many days before the septic zone disappeared. In the second case the cornea perforated at the point of cauterization and the iris prolapsed. The repeated instillation of a three-per-cent solution of sulphate of atropia freed the iris from the corneal clasp. The ulcer healed in a fortnight with the formation of a transparent facet, which disturbed vision considerably.

The case of hypopyon keratitis occurred in the person of a destitute and decrepit old woman who was treated as an out-door patient. Though the anterior chamber was half filled with pus and the corneal defect very deep, three cauterizations of the border and floor of the ulcer, in combination with instillations of a three-per-cent. solution of atropia and the compress bandage, effected a very satisfactory healing of the corneal wound with but slight opacity.

In the incipient stage of the ulcus corneæ serpens, characterized by the superficial arc of propagation, the actual cautery fulfils all the requirements of a classic procedure, acting cito, tute, et jucunde.

In the more advanced stages of the disease, when the floor of the ulcer is considerably thinned and infiltrated and the anterior chamber partly filled with septic material, the actual cautery cannot supplant the operation proposed by Saemisch. In these cases a combination of the two methods appears

rational, for the actual cautery destroys the septic material of the cornea, and the Saemisch section removes the septic material from the anterior chamber.

It has been asserted that the corneal opacities resulting from the use of the actual cautery are very dense, and that vision is consequently greatly reduced. This assertion is not corroborated by the cases here related. In no instance did the process of repair result in a true leucoma, and the ensuing corneal opacities only attained the density of nebulæ or maculæ. The delicate probe-pointed platinum cautery used in the treatment of these cases is, in the opinion of the writer, far preferable to either the galvano-cautery or Paquelin's thermo-cautery. Three seconds are required to bring the platinum cautery to a red heat, at which it remains two seconds, a sufficiently long time to accomplish the sterilization of the zone of propagation. Such transient heat is less apt to cause irritative radiation and corneal perforation.

Both the galvano-cautery with its connecting cords and the thermo-cautery with its rubber attachment interfere materially with the freedom of manipulation and the delicacy of touch so indispensable to the proper limitation of the caustic action. The platinum wire is also to be preferred to the ordinary iron probe, inasmuch as it is brought more rapidly to a red heat and neither corrodes nor scales.

ON THE USE OF THE GALVANO-CAUTERY IN EYE DISEASES, ESPECIALLY IN DESTRUCTIVE PROCESSES OF THE CORNEA.

By Dr. A. NIEDEN, of Bochum.

(*With one wood-cut.*)

Translated by Dr. J. B. McMahon, New York.

THE application of the actual cautery was introduced, as is well known, into ophthalmic practice about ten years ago. Martinache[1] recommended it for hypopyon keratitis, and Samelsohn[2] for conjunctival and other affections, yet it did not take a firm hold on the profession.

Whether it was due to a want of familiarity with this therapeutic resource of the ancients, or to the rude form of instruments (heated pins, strabismus hooks, etc.), the use of which was in such marked contrast with the delicacy of the ordinary methods of operation, the recommendations of Gayet,[3] Gillet de Grandmont,[4] G. Martin,[5] and Fuchs[6] failed to remove the feeling of aversion entertained by ophthalmologists against it.

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[1] "Ulcers of the Cornea Treated by the Actual Cautery." *Pacific Med. and Surg. Journ.*, 1873, p. 294.

[2] "Galvano-Cautery in Ophthalmic Surgery." These Archives, vol. iii., No. 2, p. 124, 1874.

[3] Gayet: "Cauterization of the Cornea." *Gaz. hebd.*, 6, 1877, and *Gaz. des Hôpit.*, No. 11.

[4] Gillet de Grandmont: "On Opacities of the Cornea and their Treatment," 1881. *France méd.*, Paris, vol. xxviii., p. 278.

[5] Martin: "Mode of Action of the Actual Cautery in Corneal Ulcers." *Journ. de Méd. de Bordeaux*, vol. x., 1880, p. 182.

[6] Fuchs: "The Use of the Actual Cautery in Ulceration of the Cornea." *British Med. Journ.*, 1880, vol. ii., p. 780.

Still there was a universal recognition of the insufficiency of the ordinary, well-known methods of treating destructive processes of the cornea, whether by medication, as with atropine, eserine, fomentations, chlorine water, and the pressure-bandage, or by operative measures, such as Saemisch's incision, and iridectomy.

The proportion of cures obtained in these cases, a sad experience in which led Roser in 1855 to assert that very little reliance could be placed in therapeutic means, became steadily more favorable in later years, so that Horner in 1871 could report the following results: 11.5 % phthisis, 24.6 % leucoma, 57.4 % cure with favorable termination. In spite of this improvement, the use of Saemisch's incision was greeted on all sides as an essential advance, and, as is well known, found ready acceptance in practice on account of its excellent results. The percentage of phthisis was by it reduced to 9 %, of leucoma adherens to 26.5 %, and maculæ to 61 %. With this positive and pleasing improvement in therapeutic methods, there were still some drawbacks which demanded attention. The principal of these was the still high percentage of ruined eyes. In consequence, the newly recommended treatment by iodoform was promptly put on trial everywhere. It seemed at first to answer every expectation, but the more sober statistical consideration of the results of Deutschmann,[1] Vossius,[2] Alker,[3] still showed 6 % or 7 % of phthisis. Very recently Schiess[4] appeared with a publication of the results of linear cauterization, mainly of the lower fornix of the conjunctiva, which showed in favor of this method only 1.4 % phthisis, 28 % moderate success, 66.2 % success, although employed in the severest cases. Whilst all previously recommended methods of treatment had been

[1] Deutschmann: "Some Observations on the Employment of Iodoform in Ophthalmic Practice" (University Eye Clinic at Göttingen). *V. Graefe's Arch. f. Ophthalm.*, vol. xxviii., 1, p. 214.

[2] A. Vossius (Königsberg University Eye Clinic): "On the Use of Iodoform in Ophthalmic Practice." *V. Graefe's Arch. f. Ophthalm.*, vol. xxix., 1, p. 297.

[3] H. Alker: "On the Therapeutic Value of Iodoform in Diseases of the Eye" (Giessen University Eye Clinic).

[4] R. Fisch: Linear Cauterization. A contribution to the treatment of destructive processes in the cornea. Inaug. Dissert. (Prof. Schiess), Basel, 1884.

favored on the purely empirical ground that they had afforded the discoverer good practical results without regard to the modus operandi, the introduction of the iodoform was, however, based on the pathologico-anatomical recognition of the infectious character of most of the destructive ulcerative processes in the cornea. Thanks to the labors especially of Horner[1] and Leber,[2] the cause of the disease was found in the mycotic action of fungi in the corneal parenchyma, and, at the same time, a rational explanation was discovered of the well-known fact that in dacryocystoblennorrhœa even trifling injuries of the corneal epithelium often lead to the severest forms of corneal ulceration. The endeavor to satisfy the causal indication induced Sattler[3] to recommend strongly the galvano-caustic method as a most powerful antiseptic agent.

On his recommendation, I adopted this method in my practice about a year ago, and have employed it in such specific cases as serpent or rodent ulcers, scrofulous abscesses, both marginal and central, the frenulum phlyctenulare with a patch of infiltration at the apex, the parenchymatous corneal abscesses occurring in trachoma, and in xerosis corneæ. My observations thus far number about 140 cases, of which I shall review only the first hundred for the sake of even numbers. I wish to give a short summary of what can be accomphished by this new method, and, if I may anticipate a little, I hope to convince my readers, as the excellent results have already convinced me that the employment of the galvano-cautery is to be highly recommended as a general method, and does invaluable service in cases for which it is specially suited.

Among the first hundred cases were seventy-three of traumatic keratitis, caused mostly by injuries from cold (not glowing) pieces of iron, pieces of coal, etc.

Corresponding to the kind of employment, ninety-two were males and only eight females.

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[1] Horner: "Disinfectant Treatment of Some Diseases of the Cornea." *Klinische Monatsbl. f. Augenheilk.*, vol. xii., 1874, p. 432.

[2] Leber: "Inflammation of the Cornea due to Septic Infection." *Centralbl. f. med. Wissensch.*, 1873, p. 129; and "Keratomycosis Aspergil. as a Cause of Hypopyon Keratitis." *V. Graefe's Arch. f. Ophthalm.*, vol. xxv., 2, p. 265.

[3] Sattler: "Transactions of the 15th Annual Meeting of the Heidelberg Ophthalmological Society," 1883, p. 104.

As to the nature of the processes of disease, there were eighty-three cases (eighty-three per cent.) of fully developed corneal ulcer, which showed more or less markedly the characteristic signs of the malignant form, considerable ciliary irritation, pericorneal injection, dirty discoloration of the floor of the ulcer, diffuse infiltration of the corneal tissue adjoining a part or the whole of the periphery of the ulcer, turbidity of the aqueous, hypopyon, and greater or less hyperæmia of the iris.

Hypopyon, as is well known, is not to be considered a characteristic sign of malignancy, but only indicates the intensity of the process; so, it was noted as present in fifty-six cases and as absent in twenty-seven, which, however, should be regarded as affections of the same kind as the former, only of more recent date.

Of the fifty-six cases of hypopyon three showed marked rodent ulcers, extending characteristically by scattered, sharply defined patches of infiltration in the adjoining tissue, which rapidly increased, destroying in twenty-four hours the bridges between them and the rim of ulcer, the process ceasing only when the margin of the cornea was reached.

Dacryocystoblennorrhœa was a complication in the comparatively trifling proportion of six per cent.; of the six cases three (fifty per cent.) showed rodent ulcers.

Still the danger of injury from chemical and microbiotic foreign bodies in the occupations of the patients who mostly come under my observation is so great that it can be considered fully as serious as the complications of serpent ulcers with fungi from the pus of dacryocystitis, which occur under other conditions in such a large percentage of cases. For the sake of statistics, I would add, in parenthesis, the further observation that the right side suffered most in this affection, being involved forty-six times, the left thirty-seven.

Of the remaining seventeen cases twelve were diagnosed as scrofulous ulcer of the cornea. They showed, generally at the periphery, sometimes toward the centre of the cornea, a deep, crater-shaped excavation with sharply cut edges, ac-

companied by a high grade of ciliary irritation and mucopurulent conjunctival secretion, and defying all therapeutic measures till the cornea had been penetrated either by operation or spontaneously.

Of the remaining five cases two were torpid infiltrations, lasting for weeks without any special irritation of the eye, and without tendency either to get worse or to improve; two showed the form of phlyctenular keratitis (frenulum phlyctenulare) having at the apex of the broad bundle of vessels a crescentic grayish-yellow patch of infiltration, which involved steadily more and more of the healthy corneal tissues. There was one case of typical xerosis corneæ.

All these cases we must now, without hesitation, refer to the class of infectious corneal processes. They seemed to be specially suited to the use of the cautery.

As a rule an attempt was first made to determine the power of diffusion of the cornea and the susceptibility of the iris to the action of atropine, by repeated instillations of which it was sought to obtain the maximum dilatation of the pupil.

If after being observed twelve to twenty-four hours, the ulcer showed a tendency to extend, and did not seem controllable by the simpler methods of treatment, the galvano-cautery was promptly resorted to. A single application often sufficed to destroy the masses of detritus clinging to the floor of the ulcer, but frequently the heated loop was applied rapidly two to ten times in order to thoroughly clear the whole floor of the ulcer and its infiltrated border.

In a few cases (four), in which, either on account of the extensive hypopyon, or because the destructive process had advanced so far as to lay bare Descemet's membrane, and had so made the emptying of the anterior chamber desirable, the end of the loop was applied a moment longer, and so the floor of the ulcer was perforated, and the aqueous humor and, in part, the hypopyon evacuated.

At first thought such a manipulation might seem dangerous, but experience shows that at the moment when the opening is effected the aqueous rapidly escapes and

promptly cools the galvano-caustic loop. All danger of injury to the iris or lens is thus removed, and the operation is certainly easier of performance than paracentesis with the knife.

As an immediate effect of the operation the floor of the ulcer is covered with a crust which is colored either grayish or brownish, according to the duration of the application of the cautery. The operation is executed without lid-speculum, with no other fixation than by the thumb and index-finger of the operator's left hand, as in Liebreich's method of cataract-extraction, without assistants and without anæsthesia.

It sometimes happens that, at the moment when the loop begins to glow, the patient notices the heated point before the ulcer has been touched, and makes an unforeseen movement of his head; the loop may thus graze the surface epithelium of the cornea in the neighborhood of the ulcer and produce an opaque stripe with white borders. This disappears in twenty-four hours, leaving not the slightest opacity to give evidence of the accident. It is well to be aware of the harmlessness of this accident, and so possibly be spared some anxiety.

In a short time we observe a surprising change. The adjacent corneal tissue gains increased transparency, and, as a rule, the aqueous becomes considerably clearer, probably a natural result of the chemico-mechanical interference with the physiological activity of the parts. The trifling pain ceases rapidly, the ciliary neurosis disappears in about the same time, the pupil dilates under vigorous use of mydriatics, and the congestion of the iris subsides. The subjective improvement of the patient, the cleansing of adherent necrosed parts from the floor of the ulcer, the fading of the zone of infiltration, the complete disappearance of the turbidity of the aqueous, and beginning or advancing absorption of the hypopyon show, within the next twenty-four hours, not only that the destructive process is at an end, but that the process of repair has already begun.

In eighty-two cases but a single application of the cautery was necessary; in fourteen cases the process had to be

repeated after an interval of two days ; and in four the cautery was resorted to three to six times. To these last cases belonged the already mentioned rodent ulcers, in which the appearance of every new point of infection demanded its prompt destruction. If in the so-called serpent ulcer, at even a single gray point, the slightest tendency of the zone of infiltration to extend is noticed, the process should be at once nipped in the bud by renewed galvano-cauterization.

In three cases, on account of the great quantity of pus, which occupied more than half the anterior chamber, or on account of its density, after cleansing the floor of the ulcer, I was obliged at once, or on the following day, to make a paracentesis of the cornea for the easier evacuation of the pus. A repetition was never necessary.

As to the results of this method of treatment I entirely agree with the statement of Sattler and Kuhnts at the next to the last ophthalmological meeting in Heidelberg, that it frequently surpasses all our expectations.

As naked facts and not general commendation are to be expected from statistic material, I shall now take leave to present them.

On studying my report some will probably entertain a suspicion that I have chosen only the most favorable cases observed, and have from prejudice selected my cases, as indeed often happens. This, however, is not the case. As already stated, I have collected the first hundred cases just as they presented themselves, from November 5, 1883, when I used the cautery for the first time.

Further, the high percentage (80%) of grave ulcerous processes—66.25 % of these hypopyon ulcers—would give poor support to the view that only the less serious forms were submitted to the galvano-caustic treatment.

The final result is that not a single one of the diseased eyes was lost, the percentage of phthisis being thus reduced to 0. Compare this with the results obtained thus far under other methods of treatment, with 1.4 %, 4 %, 9.7 %, and 11.5 % phthisis, and it must be regarded as extremely satisfactory.

Further, the ulcers so treated show only a very slight tendency to leave the marked cicatricial opacities which

otherwise so commonly occur after these processes. Sattler drew special attention to this, and established experimentally the fact that in no other method can one see more beautifully and clearly the process of repair in the cornea, with its pictures of division of the nuclei of the corneal corpuscles and of the epithelial cells, than after the application of the actual cautery. We need not wonder, then, that a true leucoma was observed in only twelve cases of the one hundred, more or less marked maculæ remaining as a result of the ulcerative process in the other eighty-eight. Exact statements of the amount of vision preserved in the separate cases are of no value, as in the majority (75 %) of the cases the ulcers were central or nearly so, and such an opacity, whether light or dense, always causes a very considerable diminution in the central visual acuteness. Such statements would then afford no evidence as to the the real value of the method, as, for example, a perforating ulcer at the periphery always gives much better visual results than the slightest ulcer at the centre of the cornea, although the former is a much severer affection than the latter. The trifling density of the cicatrix is easily understood when we consider of how much shorter duration the ulcerative process is after the use of the cautery than under any other method. The average duration of the treatment, counting from the date of the first application of the galvano-cautery till the resumption of work by the patient, was thirteen and a half days; counting to the time when the stimulant treatment with Pagenstecher's salve could be adopted, the average was ten days. In connection with these favorable results, we should consider, too, that in this method we attack the disease at once and energetically, and destroy it in the bud.

Whilst, on one hand, in suppurative inflammations of the cornea, due to the entrance of infected foreign bodies, we adopt the expectant plan in order to test the effect of the ordinary therapeutic means upon the progress of the ulcer, and hesitate to make an incision extending considerably beyond the borders of the ulcer when this is extending but slowly and when the hypopyon is insignificant, and

whilst, on the other hand, this delay often leads to considerable destruction of the corneal tissue in depth and breadth, we can now resort promptly to the galvano-caustic loop, destroy the poisonous intruder, and induce a new, fresh reaction in the entire tissue.

The cure is obtained "*tuto, cito, et jucunde*," as the old surgeons would have it, much more surely than in the employment of the means lately recommended [1] for cleansing the ulcer, the sharp spoon, chemical agents, such as chlorine water, etc.

I trust that in the hands of my colleagues the results of this method will be equally favorable, and make further words of recommendation from me unnecessary.

Finally, as to the method itself, the application of red heat, two forms of apparatus are at our disposal, not to mention such obsolete means as heated hooks, pin-heads, and graphite pencils: the small galvano-caustic apparatus of Sattler (made by v. Remiger),[2] and the Paquelin thermo-cautery with a specially thin tip. I have tried both, and do not hesitate to give unconditional preference to the former.

The use of the latter is objectionable, partly on account of the greater complication of the technical apparatus, a spirit lamp, continuous blowing, etc., being necessary in its employment, and occasioning great inconvenience to physician and patient; but mainly because we cannot get a white-hot tip sufficiently delicate to allow of the nice manipulation necessary for working in a district of no more than a millimetre in extent.

This neat manipulation is possible only with the galvano-caustic loop, which is brought to a red heat at the exact moment when it is needed, and cools as quickly, and which, moreover, produces no annoying light-effects by the slight glowing of the thin wire.

Whilst I regard the key recommended by Sattler, with a few modifications, as a very serviceable, convenient instru-

[1] Meyhöfer (Görlitz): Observations on the serpent ulcer and on the treatment of corneal ulcers, particularly the serpent ulcer, by scraping with the the sharp spoon, and iodoform.—*Zehender's klin. Monatsbl.*, vol. xxii., p. 151.

[2] The apparatus (modified key with two points and wires), well made, can be obtained from E. Albrecht, Universität Mechaniker, Tübingen, in a case, for 25 marks.

ment, the points recommended by him do not suffice for fine work.

I have had a point made for this purpose which makes it possible to use the handle and point as a lever in the hand of the operator, who can then conduct his manipulations more safely and rapidly. The point is elongated, and is

bent on itself at right angles. The operator holds the instrument, which is connected with a powerful Grenet element, in such a way that the handle rests on some point situated below the eye of the patient, its point at the same time corresponding with the centre of the ulcer. The current is then closed. When the point glows on releasing the button, a slight lever movement is sufficient to press the point rapidly and surely into the tissues to be destroyed, and by a rapid circular movement, without lifting the instrument, the whole border of the infiltration can be destroyed.

The use of this lever action makes this method simpler and safer than direct cauterization, which alone is possible with Sattler's tip.

The exact details each one will learn for himself best and most rapidly after a few trials, which I would heartily and positively urge upon him.

A short summary of the results of various methods of treating destructive processes of the cornea, drawn partly from my own statistics and partly from the essay of Fisch,[1] is here given :

Result.	Incision (113 Cases).	Iodoform (63 Cases).	Linear Cauterization (68 Cases).	Galvano-Cautery (100 Cases).
Phthisis	9.7 % (4 %)	6.3 %	1.4 %	0 %
Leucoma adh. . .	26.5 % (22 %)	93.6 %	28 %	3 % Leuc. adh.
Macula	61 % (70 %)		66.2 %	9 % Leucoma.
Unknown	3.5 % (4 %)	—	4.4 %	88 %
				—
Duration of treatment	—	20 days.	30.7 days.	13.5 days.

[1] *L. c.*, p. 45.

Further observations must determine if these numbers have constant value; the results of the cases which have since come under my observation are identical with the former.

Let me now give a résumé, such as I have incorporated in the Transactions of the Copenhagen Congress:

(1) The use of the galvano-cautery is always indicated in affections of the cornea which take their origin in mycotic infection.

(2) In such cases it gives the most thorough disinfection of the floor and edges of the ulcer, and, at the same time, stimulates the process of repair.

(3) This process of repair is shown, almost at once, in the increased diffusion power of the corneal tissue, the clearing of the aqueous humor, dilatation of the pupil, and absorption of the hypopyon.

(4) In most cases, also, it does away with the necessity of the corneal incision, because, when the evacuation of the contents of the anterior chamber is required, it can be effected by means of the heated loop. Above all, the cautery can be immediately resorted to when the malignant nature of the process is evident, and accords with the maxim, "Principiis obsta."

(5) The operation causes but slight pain, no assistant is needed, anæsthesia is unnecessary, and the method is available in the treatment of patients at the polyclinics.

(6) A rapid disappearance of the ciliary irritation is almost always observed. The duration of the healing process is considerably lessened. The final result gives a much less extensive and dense opacity of the affected corneal tissue than is found after the use of the other methods.

(7) The mode of applying the heated galvano-caustic loop is exceedingly simple and easy to master.

ACUTE GLAUCOMA CAUSED BY HOMATROPINE.

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ALTHOUGH several cases of acute glaucoma caused by atropine have been recorded, there has not been, so far as I know, a single instance resulting from the application of homatropine.

A remarkable point in the case I am about to relate is that the glaucoma supervened twenty-six hours after the instillation of the homatropine, when the maximum effect of the drug must have long passed off.

Miss C., æt. forty-four, sought my advice with reference to spectacles on January 6, 1885. Fourteen years ago she consulted another specialist, who prescribed + 3 D for reading; these she used till six months since, when she exchanged them for + 4 D. With these, 0.5 Snellen is read at twenty-three and fifty centimetres; they, however, cause much aching. Pupils of normal size, and act promptly to light. Tension of both eyes normal; this point I tested with great care, as the patient informed me a brother had gone blind from glaucoma. I proceeded to measure her manifest hypermetropia, by a method which I learned from my friend Professor Tweedy, and which I invariably employ in patients over forty, when the activity of the accommodation is usually much lowered. This consists in placing in a frame before the eyes convex lenses which considerably over-correct the hypermetropia; then holding in front of these weak minus glasses, and increasing the strength thereof till the best distant vision is obtained. But with Miss C. the ciliary muscle, probably hypertrophied from over-use, refused to relax, and I therefore resorted

to homatropine and retinoscopy. Three instillations in each eye of a 2-per-cent solution of homatropine hydrobromate at intervals of five minutes were made, and at the end of twenty minutes I estimated by retinoscopy the hypermetropia at 2 D, with which correction some letters of $\frac{6}{6}$ were read with each eye. The fundus was noted as normal. Spectacles of + 2 D were ordered for constant wear, and the prescribing of reading-glasses deferred for a fortnight.

Miss C. went home, and, contrary to orders, wore her reading-glasses (+ 4 D) the whole evening doing crochet work. About 5 P.M. on 7th January (twenty-six hours after the instillation of the homatropine), she was seized with sudden pain in the left eye, followed in two hours by severe vomiting; about 3 A.M. on January 8th the right eye also became affected. The symptoms began to remit on January 9th, at 11 A.M. When this attack took place, I was in London for the Ophthalmological Society's meeting, and my patient finding me from home sent for her usual medical adviser, Mr. Benfield, to whom I am indebted for further notes of the case. In addition to the symptoms above narrated, he observed that the eyes were intensely injected and chemotic, and that the vomiting was attended with a dry, furred tongue; medicine for the relief of the stomach derangement was prescribed by him.

I did not see the case till 6 P.M. on January 10th; there was then no chemosis, but both ocular conjunctivæ were injected, that of the left eye being more intense than the right; some photophobia was still present, but pain was gone. Tension, R E, = + 1; L E, = + 2.

I dropped into each eye a solution of eserine (gr. ij to the ounce), and prescribed drops of half that strength, to be continued thrice daily.

On January 12th I found both pupils well under the influence of eserine, and the tension normal. With a view of preventing any relapse, I directed the eserine to be used once in the twenty-four hours, at bedtime, for three days.

January 16th.—Tension remains normal. The distance glasses (+ 2 D) were now ordered to be used constantly, but no close work of any kind allowed.

January 26th.—The eyes have now quite recovered their natural appearance; the pupils are of average size, and act promptly to light. T. N. V + 2 D = $\frac{6}{6}$. Field of vision, normal.

I directed my patient to continue to wear the distance-glasses

constantly, but not to read much or do close work of any kind for three months, and on no account to exercise her vision for near objects without reading-glasses (+ 4 D).

From the fact that the outbreak of glaucoma did not occur till twenty-six hours after the instillation of the homatropine,[1] I am inclined to the opinion that the attack was not caused by the blocking up of the angle of the anterior chamber by the mechanical application of the periphery of the iris; but that straining of accommodation to do crochet work when the ciliary muscle was only partially paralyzed by homatropine caused congestion of the whole ciliary region, and so obstructed the normal outflow from the eye.

[1] I usually find that the effect of the homatropine, used as above described, completely passes off in from twenty-four to thirty-six hours.

CONTRIBUTIONS TO THE DETERMINATION OF THE REFRACTIVE CONDITIONS OF THE HUMAN EYE DURING THE FIRST FIVE YEARS OF LIFE.

By Dr. C. HORSTMANN, Berlin.

Translated by Dr. W. B. Marple, New York.

THE study of the development of refractive anomalies in the human eye requires a precise knowledge of its refractive properties during the first years of life. While we have a great number of examinations made upon the eyes of school-children, for the purpose of determining the influences causing myopia, much less study has been devoted to the determination of the refractive conditions in children not yet old enough to go to school.

In order to be able to follow up the development of refraction during the first five years of life, I examined 150 children (300 eyes) carefully with the ophthalmoscope: 50 new-born children; 50 between one and two years of age; and 50 between four to five years. I took my material for the most part from the middle and better classes, inasmuch as it is well known that here myopia is much more prevalent than in the lower classes of society. At the same time I sought to obtain determinations of the refraction of the parents, in order to be able to demonstrate any hereditary influence possibly present.

We already have a number of publications in regard to the eyes of new-born children. The first who took up the subject, more than twenty years ago, was E. v. Jäger.[1] He

found among 100 eyes of children 9–16 days old, 17 hyperopic, 5 emmetropic, and 78 myopic, 48 of the last having myopia of $\frac{1}{12}$–$\frac{1}{6}$. The great number of myopic eyes was remarkable; its cause must certainly be the too great curvature of the lens, since the examination was made without the use of atropia. Eighteen years after Jäger's publications Ely [3] investigated the same subject, his results differing essentially from those of Jäger. Among 154 eyes, under the influence of atropia, he found myopia in 27, emmetropia in 21, and in the remainder, 106, hypermetropia. About the same time I [3] made my examinations on new-born children. Among 40 eyes of children 8–20 days old, treated with atropia, 28 were hyperopic, 8 emmetropic, 4 myopic. The latter refractive condition only amounted to 0.5–1.0 D however. I disovered, moreover, that, notwithstanding the instillation of atropia, repeated several times, it was frequently impossible to obtain a mydriasis *ad maximum*. I must suppose, therefore, that the refraction of the new-born is usually one of hyperopia, since atropine so frequently fails to relax completely the tension of the muscle of accommodation. The results of Königstein,[4] who examined in Späth's clinic, at Vienna, the eyes of nearly 300 new-born children, confirmed the latter opinion. He found not a single myopic eye, and very few emmetropic, while all the others were hyperopic. In very many cases the degree of hyperopia amounted to more than $\frac{1}{12}$; in most, however, to $\frac{1}{16}$–$\frac{1}{20}$. The examinations of Schleich,[5] which he made in the obstetrical clinic of Tübingen, on 150 children during the first eight days of life, agree also essentially with those of Königstein. He found hyperopia in every case without exception. The degree of hyperopia varied between 1.0–8.0 D, the average amounting to 4.4 D. The lower degrees of 1.0 to 2.0 D were observed least; those between 4.0–5.0 D most frequently. G. Ulrich [6] found the structure of the eye of the new-born exclusively hyperopic. Jaunik Bjerrum,[7] on the other hand, observed among 87 children (ranging in age from 7 hours to 14 days) hyperopia of 4.0 D in 44, hyperopia of 2.0 D in 17, emmetropia (including the cases of myopia and hypero-

pia less than 1.0 D) in 23, and myopia in 3. The degree of myopia amounted to 2 D twice, and to 3 D once.

These results of separate observers, differing from one another in many points, caused me to make a new series of examinations of the refraction of new-born children. I examined in the upright image the eyes of 50 children from 8–30 days old, by lamp-light, using my modification of Hirschberg's ophthalmoscope. Some hours before the examination a 1 % solution (in many cases a 2 % solution) of atropia was dropped into their eyes several times, so as to secure as complete relaxation of accommodation as possible, as well as good mydriasis.[8] The children were fastened in a cushion, and leaned by the nurse against her own shoulder, so that the child assumed almost an upright position. Sometimes it was necessary to fix the head lightly, but usually the children gazed quietly into the ophthalmoscopic mirror, so that with careful raising of the upper lid the examination of the optic nerve, together with its immediate surrounding, could be accomplished without particular difficulty.

The determination of the refraction (in which the small vessels coursing from the optic nerve towards the macula, and as near as possible to the latter, furnished the object-points for examination) gave the following results:

M. 2.0 D in 2 eyes.	H. 3.0 D in 36 eyes.
E. " 10 "	H. 4.0 D " 14 "
H. 1.0 D " 16 "	H. 5.0 D " 4 "
H. 2.0 D " 16 "	H. 6.0 D " 2 "

The average refractive condition consequently amounted to hypermetropia 2.4 D. In a number of hyperopic eyes the presence of regular astigmatism could be demonstrated; a difference in refraction between the two eyes could be established in only a very few cases, and even then the difference did not amount to 1.0 D. I devoted special care, of course, to the myopic, emmetropic, and slightly hyperopic eyes.

As in the former examinations, I found also this time that the instillation of atropia in a number of eyes produced only incomplete mydriasis, and therefore probably incomplete relaxation of accommodation also. While there was

complete mydriasis in only 8 eyes, with hyperopia of 2-6 D, I found it among the 16 eyes with H. of 1.0 D and the 10 emmetropic eyes, in almost half, viz., in 10 eyes. With a horizontal corneal diameter of 8.5–9.5 *mm.*,[9] the diameter of the pupil *well dilated* amounted to 5–6 *mm.* But in the 18 eyes with insufficient mydriasis, the pupil was only $\frac{3}{4}$ *mm.* broad. In these cases, notwithstanding the very free use of atropia, the pupil could not be further dilated. This condition occurred always in both eyes, and only in children under 14 days old.

The only case of myopia (2.0 D) found, occurred in a child 21 days old. The horizontal diameter of the cornea amounted to 9 *mm.* in both eyes; that of the dilated pupil to 6 *mm.* Not the slightest abnormity could be observed either in the optic nerve (with the exception of a border of pigment on its temporal side) or in the rest of the fundus. A complete relaxation of the accommodation could be inferred from the dilatation of the pupil.

In 42 cases it was possible to obtain determinations of the refraction of the parents of the children. The father was myopic in 10 cases, the mother in 8, and both parents in 3. Generally in regard to the eyes of the children no hereditary influence could be demonstrated, since the children of myopic parents often presented the highest degree of hyperopia. Compound myopic stigmatism (entirely corrected by a spherical-cylindrical glass, — 3 D comb. cyl. — 1 D) was only found in the father of the single myopic child. This condition was said to have existed in the individual from childhood, and not to have changed essentially. The mother was slightly hyperopic. In this case indeed there could be no doubt as to the existence of a congenital hereditary myopia, transmitted from the father.

The other facts in regard to the eyes of the new-born which Königstein [10] and Schleich [11] have observed I could confirm, so far as they concern the color of the iris, the optic papilla and its borders, the condition of the retinal vessels, and the fundus. On the other hand, I found only in 3 cases the remains of the pupillary membrane; and retinal hemorrhages only twice, in children 8 and 10 days old

respectively, in whose case the labor had lasted very long. These hemorrhages had already begun to be absorbed, and after four days no trace of them could be found. The reason why I could not find this condition more frequently (as the authors above mentioned succeeded in doing) was probably because all the children examined by me were more than eight days old.

The second series of examinations was made on 50 children, 1–2 years old. On account of their restlessness, it was a much more difficult and tedious task than in the newborn. Yet, even here, with patience I succeeded in attaining my object. The instillation of atropia, one or more times, several hours before the examination, always caused a sufficient mydriasis. The diameter of the dilated pupil amounted to 5.5–7 *mm.*, where the horizontal corneal diameter was 10.0–11.5 *mm.*[19]

The results in the 100 eyes were the following:

M. 2.0 D in 2 eyes.	H. 2.0 D in 32 eyes.
M. 1.0 D " 4 "	H. 3.0 D " 18 "
E. " 10 "	H. 4.0 D " 6 "
H. 1.0 D " 24 "	H. 5.0 D " 2 "

H. 6.0 D in 2 eyes.

The mean refractive condition was accordingly H. 1.8 D. A difference of 1.0–1.5 D in the refraction of both eyes existed in four children who were hyperopic. Worth noting was the fact that in 3 myopic eyes, 2 of 2.0 D, and 1 of 1.0 D, the first traces of a beginning crescent (conus) could be discovered.

I succeeded in determining the refraction of the parents of 39 of the children: 3 myopic, 5 emmetropic, and 31 hyperopic children. A high degree of myopia was found in the mothers of 2 myopes, while the fathers were emmetropic. In the third myope, the parents were emmetropic, or slightly hyperopic. Of the 5 emmetropic children, once the mother alone, and twice the father alone, was myopic, while the other parents showed normal refraction. In no case were both parents myopic, but in the case of four hyperopic children both parents showed a degree of hyperopia, ranging from low to medium; 6 hyperopic children had a myo-

pic mother, and 7 a myopic father. The parents of the remainder were either emmetropic or hyperopic.

In these fifty eyes the average refraction had diminished from H. 2.4 to H. 1.8 D; besides, the first symptoms of a developing myopia were beginning to appear. It can be supposed that the disposition thereto was inherited, since in two cases the mother showed myopia of a high degree. Nevertheless, another series of cases proved that this anomaly of refraction, and the disposition thereto, is not always transmitted from parents to children.

In the "*Refractive Conditions*," published by me in 1879," of the eyes of ninety-six children between one half and one year of age, which I have not made use of in the present tables, there were seventy eyes belonging to forty-two children between one and two years of age (a contradiction,—ED.). Of these fifty-three were hyperopic, ten emmetropic, and seven myopic. I could demonstrate here also, in three myopic children (five eyes), that both parents were near-sighted; in one child (two eyes), only the mother was near-sighted. I nevertheless observed at that time also cases in which the myopia of the parents was not transmitted to the children.

The eyes of fifty children between four and five years of age—in whom accordingly school work had not yet exercised any influence—were likewise treated with atropia some hours before the ophthalmoscopic examination. The mydriasis was in all cases satisfactory; the horizontal diameter of the dilated pupil amounted to 6–7 *mm.*, when the horizontal corneal diameter would be 11–12 *mm.*"

The refraction of these cases was the following:

M. 3.0 D	in 2 eyes.	H. 2.0 D	in 26 eyes.
M. 2.0 D	" 5 "	H. 3.0 D	" 16 "
M. 1.0 D	" 6 "	H. 4.0 D	" 8 "
E.	" 13 "	H. 5.0 D	" 4 "
H. 1.0 D	" 18 "	H. 5.5 D	" 3 "

The average degree of refraction accordingly amounted to H. 1.59 D. Differences of more than 1.0 D between both eyes were observed here more than in the younger children. In one case myopia of 2.0 D was demonstrated in the right eye, while the left was emmetropic. Among the hyperopic

children there were three with a difference of 2.0 D between both eyes, and six with a difference of 1.0 D.

In one child with myopia 3.0 D in both eyes, there was at the temporal border of the optic disc a choroidal atrophy with irregular borders; the traces of a similar condition could be seen also in three eyes with M. 3.0 D, and in two with M. 1.0 D. With these exceptions the ophthalmoscopic appearances were normal. In this series of cases we were able to determine the refraction of the parents of forty-one children. The father of the child with M. 3.0 D was also highly myopic, the mother emmetropic. The same condition existed in the parents of one child with M. 2.0 D, while in the case of the second child with M. 2.0 D the parents were both emmetropic, or slightly hyperopic. In regard to the parents of the children with M. 1.0 D, in one case both were myopic, and in another only the mother. Among the parents of the four emmetropic children twice the mother alone was myopic; once the father alone; the rest were emmetropic or hyperopic. The child with emmetropia in one eye, and M. of 2.0 D in the other, had hyperopic parents. Thirty-one hyperopic children had a myopic mother in five cases, a myopic father in three; both parents moderately near-sighted once; all the rest were either emmetropic or hyperopic.

Though the number of emmetropes and myopes in this series had increased at the expense of the hyperopes, the results are, nevertheless, in striking contrast to those of E. v. Jäger.[18] He found among the eyes of one hundred children, from two to six years old, hyperopia in eight, emmetropia in thirty, and myopia in sixty-two. The difference can only be explained by the fact that Jäger had not employed atropia.

In regard to the conclusions from my examinations they were as follows:

The refractive condition of the eyes of the new-born is almost always one of hyperopia; not infrequently there is emmetropia, while myopia is very rarely met with. That former investigators found the latter more frequently can only be explained by the fact that the ac-

tion of atropia on the eyes of the new-born is not always uniform, since it frequently fails to completely relax the accommodation. In a number of new-born children examined by me I could observe this fact. I feel sure, therefore, that the number of cases of emmetropia and hypermetropia of low degree is smaller, and of hypermetropia of higher degrees is larger, than that found by me in this series. After the children are a year old the action of atropia is always sufficient. The refraction from this age up changes in such a way that the number of hyperopic eyes is continually decreasing, and more emmetropia, occasionally, also, myopic eyes of low degree, are found. Yet up to the fifth year of life the great majority of eyes are still hyperopic.

As already mentioned, congenital myopia is found in very few cases. In one case I succeeded in finding it. I probably had to do here with a myopia due to too great curvature, which had been transmitted from father to child.[16] I never saw a myopia due to too long an axis of the eye in a new-born child, while I could demonstrate its beginning already in children who were over a year old. I found it in three children two years of age, and in six who were five to six years old. I was able in all these cases to determine the refraction of the parents. In five cases one of the parents was highly myopic, in one both were myopic, and in the remainder there was emmetropia or hyperopia. I believe, therefore, even if myopia (from the ocular axis being too long) is not congenital, at least the predisposition thereto exists from the beginning, and is frequently transmitted from parents to children. The high degrees of near-sightedness begin to develop before the child is old enough to go to school, while the middle and low grades are apt to appear only after the sixth year. According to the opinion of Tscherning,[17] excessive myopia is not caused by using the eyes for close work; this latter only increases the myopia.

References.—[1] "Ueber die Einstellung des dioptrischen Apparates im menschlichen Auge," Wien, 1861, page 20. [2] Beobachtungen mit dem Augenspiegel bezüglich der Refraction Neugeborener.—*Arch. f. Augenheilk.*, 1880, Bd. ix., page 431. [3] Tageblatt der 53. Versammlung deutscher Naturforscher und Aerzte zu Danzig, 1880, page 256. [4] Untersuchungen an den Augen neu-

geborener Kinder.—*Medicinische Jahrbücher*, Wien, 1881, Jahrgang 1881, Heft 1, page 47. [6] Die Augen 150 neugeborener Kinder ophthalmoscopisch untersucht.—Nagel's Mittheilungen aus der ophthalmiatrischen Klinik in Tübingen, 1882, Bd. i., Heft 3, page 44. [6] Refraction und Papilla optica der Augen der Neugeborenen.—Inaug.-Dissert., Königsberg, 1884, page 9, u. ff. [7] Ueber die Refraction der Neugeborenen.—Ophthalm. Section des internationalen medicinischen Congresses zu Kopenhagen, 1884. (Letztere Arbeit war Verf. nur im Referat zugänglich.) [8] Instillation of Homatropia was tried several times, but without satisfactory result. [9] Vergl. v. Reuss, Untersuchungen vom Einfluss des Lebensalters auf die Krümmung der Hornhaut, nebst einigen Bemerkungen über die Dimensionen der Lidspalte.—*V. Graefe's Arch. f. Ophthalm.*, Bd. xxvi., 1, page 51 u. ff. [10] *L. c.*, page 48 u. ff. [11] *L. c.*, pag. 51 u. ff. [12] *Conf.* v. Reuss, *l. c.* [13] Ueber Refractionsverhältnisse von Kindern.—Bericht ueber die zwölfte Versammlung der ophthalm. Gesellschaft zu Heidelberg, 1879, page 237 u. ff. [14] *Conf.* v. Reuss, *l. c.* [15] *Conf. l. c.*, pag. 20. [16] Laqueur (Ueber Hornhautkrümmung im normalen Zustande, und unter pathologischen Verhältnissen.—*V. Graefe's Arch. f. Ophthalm.*, Bd. xxx., 1, page 104) fand bei einem 4 Wochen alten Kinde vermittelst des Javal-Schjötz'schen Ophthalmometers einen Hornhautradius von nur 6.75 *mm.*, was für meine Ansicht spricht. [17] Studien über die Aetiologie der Myopie.—*V. Graefe's Arch. f. Ophthalm.*, Bd. xxxix., 1, page 201.

A NEW SELF-REGISTERING PERIMETER.

By Dr. G. MAYERHAUSEN, Munich.

(*With two descriptive cuts on plate iv.*)

Translated by Dr. J. H. Shorter, New York.

THE advantages offered by a perimeter with self-register are too evident to be overlooked.

First. For the great saving of time. Every oculist recognizes the great loss of time in taking a field of vision by perimeter according to the method heretofore in use. It becomes a still more complicated matter when it is a question of mapping out scotoma and various different visual defects. The self-registering perimeter entirely obviates the needless loss of time occasioned by the examiner being compelled for each position to seek out and note with pencil the corresponding point on the chart.

Second. Especially in mapping out complicated fields of vision, the greater exactness of the automatic registering in contrast to the annotation by hand is not to be undervalued. As the self-registration is exactly on the corresponding point of the chart, all sources of error in recording are eliminated.

Third. While taking the field of vision, the physician can direct his attention much more closely to the patient, and thereby control continuously the fixation-position of the head, etc., which last the patient is only too prone to change when opportunity is given him.

Fourth. The duration of the sitting being much shorter,

the patient experiences far less fatigue than in the other case, and by his greater attention aids the examination and furthers its exactness.

On grounds above stated, the construction of a self-registering perimeter must be regarded as a decided step forward. Geo. T. Stevens was the first to construct one, which was demonstrated by our American colleague at the General International Medical Congress, at London, 1881.

Since that time, from the suggestions given, such instruments have been also constructed by MacHardy, Priestley Smith, and Magnus Blix, with more or less important modifications.

A comparative description of these can be spared here, as full descriptions and pictures of them are found in the journals containing the articles concerning them.

My endeavor has been to construct an instrument which, while possessing the highest functional accuracy with the greatest possible simplicity and solidity of construction, together with ease of manipulation, should not vary much in price from that of the ordinary non-self-registering perimeter in use heretofore.

Only when combining all these attributes can the use of the self-registering perimeter become general in ophthalmic practice.

We now proceed to describe the instrument itself. The Arm *A* (plate iv., fig. 1), which is furnished at its extremity *B* with a spring clamp to hold the test object, is by its first portion, which is straight, fitted on the perpendicular axis *C*, and revolves about the latter in such a way that the extremity *B* describes a semicircle with a radius of 30 *cm.*

Fastened to the other (the lower) end of this axis *C* is a cogged semicircle *D*, the teeth of which fit exactly into those of a rack *E*. This rack *E* is screwed fast to a perforated plate *F* in such a way that in any movement of the arm *A* the motion communicated through the semicircle *D*, revolving on the axis *C*, and thence to the rack *E*, causes horizontal rectilinear sliding of the plate *F* from the centre toward either side at will. As the teeth on the semicircle

and those on the rack work into each other, and are of the same size, the measure of the displacement of this plate is, of course, exactly equal to that of the periphery of the wheel passed over in turning.

On the graded arc *J* can be read off in degrees the distance passed over in turning the arm *A*.

This turning is accomplished by means of the double-headed button *K*. The little column *L*, whose upper end is formed by the button, is perforated through its entire length. In this hollow is a movable pin which rests below, by a rounded end-piece, on the spring *V*. Now holding between the middle and index fingers the little column *L*, which forms a single piece with the lower plate of the double button, and pressing on the top plate of the button, which is continuous with and forms part of the movable pin, the spring *V* is lifted from the graduated arc and the arm left free to move. On removing the pressure the spring presses firmly against the under surface of the arc, and thus the arm may be fixed in any position.

The perforated plate *F* supports in the centre a button *G*, terminated at its lower end by the needle *g*. On pressing down the button this needle indicates, in the field-of-vision chart below, the position of the arm *A*, or, in other words, of the test object. On releasing the button, the needle flies back into place by means of a small spiral screw *i*.

This entire mechanism is fastened to the quadrangular frame *N*, the lower part of which is provided with the contrivance for inserting the field-of-vision chart.

This contrivance is in a round setting in a plane parallel to the plane of the frame, and turnable about a point—which point is the centre of the space enclosed by the frame.

The contrivance consists of a ring *O* inseparable from the instrument, turning in the setting, and overlapped at its lower circumference by the border *Q*; also the rounded plate *y*, with three spring clamps *x*, for the purpose of fastening it to the border. The latter has an inner covering of soft, light wood, directly on which the field-of-vision chart lies.

In order to insert the chart, the plate is removed, and the chart fastened to it by two small pins which project from the plate. The little needle holes (*c* and *d*, pl. iv., fig. 2) through the chart, in which the little pegs are inserted, lie in prolongations of the lines marking the meridians 0° and 180° respectively. These pegs fit exactly into two small holes in the rim *Q*, lying diametrically opposite each other. Thereby the entire supporting apparatus of the chart can be revolved, and each meridian from 0° to 359° brought to registration, after the plate has been fastened to the circle by means of the three clamps *x*.

When the arm *A* stands at 0° of the arc *J* the needle *g* is, of course, exactly at the middle point—that is, the centre of revolution of the chart.

In turning the ring *O*, the spring *s* catches from ten to ten degrees with an audible click, so that in taking an ordinary field of vision I have no occasion to lose time in making further entry in the series of successive meridians.

The entire registering apparatus is now made fast to the stout arm *R*, which turns in a circle about a horizontal axis *S*, and bears on the central end an index *M*. This index shows in degrees on the disc *T* the position of the arm.

This axis is borne by the column *T*, which stands fast on the foot-board *Z*.

The arm *R* is turned by one of two cranks, *a* and *b*, through an endless screw *H*, and the pinion wheel *W*, which is firmly connected with the arm and axis. But during these manipulations it is recommended for protection of the instrument to always support the arm *R* by the hand.

The movements of the arm take place by this means with tolerable rapidity. But in order not to have to turn the cranks for so long a time, in the exceptional cases when one wishes to test the visual fields in widely separate meridians, and one has to pass rapidly from one meridian to a distant one, there is a contrivance provided which allows the entire apparatus to be put out of gear in a moment.

For this purpose the endless screw is provided at *m* with

a ball joint. On pulling out the peg *n*, which holds the screw in place, the end of the screw towards the handle *b* is automatically tilted up by a spring *o*, fastened below, and thus displaced from contact with the pinion.

The arm thus becomes freely movable, and can be turned by the hand to the intended position. When in place desired, the screw is again depressed, and the peg pushed home to make it fast.

The chin holder is the ordinary one. The chin support *p* is fastened at any desired height by the screw *r*.

The screw head *S* serves as fixation point for the patient.

The material of which the perimeter is made is, with the exception of the base board, partly iron and partly brass.

With regard to what pertains to the field-of-vision chart, it may be noted that the parallels are at exactly equal distances apart. As has been observed by others, last by Förster, a chart, with the parallels constantly diminishing in distance from each other towards the equator, gives no full, correct view of the inscribed visual field.

The above-mentioned author also makes the suggestion if, instead of marking the meridians from 0° to 180° to each side, it would not be better to number them successively from 0° to 359°.

Regarding it as most practical, I have numbered the meridians on the right half of each visual field from 0° to 180°, then on the left half from 180° to 359°.

The same chart is used for each eye.

The point of fixation lies, of course, in the axis.

Plate iv., fig. 2, presents the chart in its natural size. The meaning of the points *c* and *d* has been already given.

It is certain that a universally used conventional chart, without additional drawing, would simplify very much the description of the fields of vision, as Förster has forcibly remarked.

Finally, I may remark that with regard to the question of the normal boundary of the visual field, it has often occurred to me, if it would not be judicious to construct a new perimeter which would measure to the outer side more than 90°—for example, 100°.

But as our perimeter is designed especially for practical clinical purposes and in this view the accurate testing of the remaining visual field is the important thing, it is a matter of little moment whether the temporal boundary lies somewhat beyond 90° or not. So I have decided not to depart from the usual method in this instrument.

I only add further the notice that in using the perimeter the chart must be always so inserted that the same meridian is marked on this as is indicated by the index on the disc *T* on the axis of the arm *R*—that is, if the index stands at 0° on the disc, the chart must be so situated that the meridian marked 0° must lie directly in front of the patient. If the index, for example, is moved to 20°, the chart must be turned until the 20° meridian is in the place formerly occupied by the 0°.

Although, by reason of the perfection of the instrument, the arm *R* is capable of describing an entire circle and being held fast in any position desired, still it is recommended, as being most convenient in the registration, not to raise the arm outwards above the horizontal.

In taking an ordinary field of vision it is best to select as the point of departure the location of the index *M* at 270°, passing in succession to 280°, 300°, 320°, 340°, 0°, 20°, 40°, 60°, 80°.

The instrument can be had of G. Rodenstock, Munich and Würzburg, for 175 marks.

CONTRIBUTIONS TO THE PATHOLOGICAL ANATOMY OF THE CHOROID.

By Dr. F. DIMMER,

ASSISTANT AT PROF. V. JÆGER'S CLINIC IN VIENNA.

(*With plates iii. and iv.*)

Translated by Dr. Morris L. King, New York City.

I.—*Proliferation of endothelium in a choroidal exudation.*

IN an eye with sarcoma of the choroid, which was removed in May, 1882, at Prof. Arlt's clinic (whose assistant I then was), I had the opportunity for making interesting observations. I will first give a brief history of the case, and then describe the microscopic appearance.

The left eye of a healthy man of forty-eight years had for the past eight years gradually lost the power of vision. Five years ago he had severe pains for two weeks, these disappearing of themselves. Within the last six weeks, however, he had had them again, causing him to seek advice.

On admission, there were amaurosis, conjunctiva injected, somewhat œdematous, the cornea slightly dim, the anterior chamber deep, and the lower part filled with blood; the tissue of the iris was turgid, of a greenish color, and the lens transformed into an opaque yellowish mass. The eyeball was painful to the touch; tension reduced to — T 1. Enucleation was done on May 28, 1882, and the eyeball placed in Müller's fluid.

A later examination showed the presence of a brown nodule the size of a hemp-seed, composed of slightly pigmented, very small, roundish cells; this nodule was situated on the sclera,

about 9 *mm.* behind the lower border of the insertion of the external rectus.

On opening the eye, it was seen that nearly opposite this small nodule there was a similar prominence in the choroid. This also was formed of small, round cells, the central ones only being pigmented. In the vicinity of the optic nerve another brownish growth was seen, measuring about 10 *mm.* across the base. Its most prominent part was just over the papilla, where it projected into the eye about 4 *mm.* At its outer border it dropped off suddenly, but toward the inner side it was gradually lost in the choroid, so that here its borders were hard to define. Microscopic examination showed that it was mainly composed of pigmented spindle-shaped cells lying in a finely fibrillated reticulum. In some places, especially in the vicinity of the optic nerve, there were aggregations of large, round, deeply pigmented cells. Some parts of the growth had degenerated into a finely granular mass, in which, here and there, were seen rust-colored pigment granules distributed irregularly. Wherever the remains of vessels were seen in these growths, their walls were found to be very thin, and crowded with these pigment granules. The limitans of the choroid was in folds over the surface of the tumor, and could be traced to the region of the papilla. In the lower part of the eyeball nothing could be seen of the choroid, over a considerable space, but in its place was a granular, yellowish-white mass, composed of finely granular detritus and numerous round cells. There were no prominent changes in the cornea, and Schlemm's canal could not be found. In the lower part of the anterior chamber there was an accumulation of round cells and red blood-corpuscles, connected with each other by a structureless mass. Excepting the pupillary region, the whole lens was surrounded by a dense connective-tissue exudation. The iris was adherent to the latter. In the ciliary body, and about this exudation, and behind the lens, were found large round masses of pigment, in which no nuclei could be discovered. The ciliary body was separated from the sclera by a homogeneous mass which contained only a few irregularly distributed cells. From the centre of the swelling, just over the papilla, the retina projected as a thin cord. Its smallest diameter was at its centre (1.5 *mm.*), expanding but little behind, but assuming a cone shape anteriorly. On arriving at the posterior pole of the lens, it became continuous with the exudation which has been mentioned, covering the pos-

terior surface of the lens. In transverse section could be recognized the folded remnants of the limitans, and numerous vessels with greatly thickened hyaline walls.

Even macroscopically we could discern an unpigmented layer, about 0.75 *mm.* in thickness, lying on the inner surface of the tumor, and covering it in its whole extent. At the inner part of the eyeball, where the tumor merged into the somewhat thickened choroid, this layer was separated from the latter by a layer of structureless material (coagulated fluid). Not until it reached the region of the ora serrata did it again become united with the choroid, and was merged into the exudation covering the inner surface of the ciliary body. This choroidal exudation was composed of wavy connective tissue, and on its external surface, which faced the limitans of the choroid, were found remains of retinal epithelium, partly pigmented and partly not. We will again refer to this point. In the vicinity of the papilla it became considerably thickened, so that the transition into the cord formed by the detached retina was quite gradual, rising in a slightly curved line.

Even with low powers we could easily see that it contained peculiar fissures, particularly near its outer surface. These were very long, extending mainly parallel to the surface of the membrane, or only slightly obliquely to it. It was only occasionally that such fissures were seen near its inner surface, but they were particularly numerous where the detached retina passed away from the connective-tissue exudation; they could even be seen although quite rarely on the outer surface of the latter, near its origin. In the two locations just mentioned their direction was quite irregular, but at the same time they were occasionally inclined toward each other, so that they seemed to be arranged like the crystals of an excrescence.

The length of these fissures was about 0.12 *mm.*, and they were filled with a homogeneous substance which took up carmine coloring to a slight extent. Their walls were lined with masses of varying thickness on cross-sections of the exudation, of spindle, bulbous, or columnar shape, and homogeneous under a low power. Only when examined with higher powers (fig. 1) was it possible to discern that these growths were composed of cells packed closely together. Their nuclei were large (from 0.003 to 0.008 *mm.*), oval, the protoplasm being scanty. Half of one or the other of these cells extended into these fissures. Often it was not

possible to distinguish the cell borders, and even when this could be done, we could only see a mass of protoplasm filled with numerous nuclei. It also sometimes contained scattered pigment granules. Even when the fissures were close together, the intervening space in cross-section was not always entirely filled with these masses of cells, but a portion was often occupied by wavy connective tissue. This was also the case where single fissures appeared in the exudation separated from the others. In longitudinal sections, which were made by teasing the exudation, one could also see similar long fissures surrounded by masses of cells. Often in these, also, no connective tissue was seen between them. The partly long and partly round cells were then usually very large (fig. 2).

The question now was: How should this condition of things be interpreted? It could not possibly be a proliferation of sarcoma into the exudation, because the formations above described were found outside of the intact limiting membrane of the choroid, and frequently in the periphery, entirely without any connection with those found in the vicinity of the optic nerve. It is much more probable that the cell-masses lining the cavities originated in the connective-tissue cells of the endothelium.

The membrane in this case was probably formed after the retina had become detached, because if it had been otherwise, adhesion between the choroid and retina would have resulted. In the exudation, therefore, it led to a proliferation of the endothelial cells. These produced the above-mentioned formations resembling giant-cells, and the fissures situated between the bundles of connective tissue became wider.

RANVIER, KUNDRAT, and others have shown this to be true of the endothelium of connective tissue and of serous membranes. They also mention the formation of giant-cells, and although the occurrence of such proliferations has often been described, I do not know that it has been observed in this manner in a newly formed membrane lying on the choroid. The pigment granules found in some of the proliferated cells must be considered as having been derived from the remains of the pigment epithelium which will be

described immediately, especially as they were only found in its immediate vicinity.

II.—*On the origin of the colloid excrescences of the choroid.*

The microscopic examination of this globe disclosed an interesting state of affairs in still another respect. In cross-sections, a pigmented layer could be seen in many places over the limiting membrane of the choroid. In many places this was next the hyaloid membrane, but occasionally a thin, structureless layer was seen between them, consisting apparently of a coagulated fluid. Lying on the limiting membrane and projecting into the exudation, were a few small hyaline deposits, of a roundish, well-defined shape—the so-called colloid excrescences of the hyaloid membrane. But in the region of pigmented cells, and surrounded by them, there were seen numerous hyaline or finely granular bodies of roundish, well-defined shape, resembling closely the colloid excrescences. They were less numerous and smaller in the posterior part of the globe over the tumor, but in the anterior part more numerous and larger. In the posterior part fewer pigmented masses were to be found.

Surface preparations were made wherever the exudation was thin or could be separated into layers. In these we could see the pigment occasionally collected in large masses.

These round masses often had a diameter of 0.55 *mm.*, but no further structure was recognizable. Between them were found large spindle-shaped and round cells, in which the non-pigmented nuclei were distinctly visible. This distribution of the pigment was the cause that at the spot first mentioned, where the membrane was raised from the choroid, a very fine dark stippling was visible with the naked eye. Between these pigment masses and cells, and occasionally surrounded by them, were found the hyaline or finely granular masses—the colloid excrescences seen in cross-section.

On closer examination of the outer surface of the loosened membrane, I found cells which, though only slightly pigmented, from their angularity and relation to each other, could not be considered to be any thing else than changed epithelial cells ; they did not form a continuous layer, but were deposited in large groups. The diameter of these cells averaged 0.015 *mm.*, and they contained one and often two nuclei, which stained easily with hæmatoxyline. Among them and in their vicinity were

granular and round cells, and others greatly increased in size, either not at all or but slightly pigmented. Where pigment was still present, it took the shape of large masses whose color was considerably lighter and somewhat more reddish than that of normal pigment (fig. 3). In the non-pigmented cells the nucleus was often, at the edge, very pale and hardly visible (fig. 4). In some places many such cells were closely heaped together. In some of them no nucleus at all was recognizable. Farther on the transition to the wholly hyaline bodies (fig. 6) was formed by grayish granular masses, in which or at whose edges could be seen the remains of the borders of the cells of which they had been formed (fig. 5). The larger hyaline bodies referred to were distinctly arranged in layers, in so far that a sharply defined hyaline central portion was surrounded by a thinner finely granular stratum (fig. 8). The contours of the central parts were sinuous, and in them were frequently scattered numerous small light reddish-brown pigment granules.

In the same manner, but with greater ease and certainty, I could trace the origin of the colloid excrescences in another case. This occurred in the eye of a man forty-five years of age, who fifteen years previously had lost the sight of the right eye without known cause. The globe afterward often became painful, and this circumstance caused him to apply at the clinic for admission, and to consent to the removal of the eye.

In the amaurotic eye there was ciliary injection ; tension diminished to — T 1 ; the cornea dimmed and its surface stippled. The anterior chamber had disappeared entirely. The thinned, atrophic iris rested against the cornea above. In the lower part only traces of the iris were visible. The lens, opaque and of a yellowish-white color, lay at the bottom of the anterior chamber, nearly touching the posterior surface of the cornea.

After opening the globe the following state of things was found : The whole lens had undergone calcareous degeneration ; the retina was totally detached, and in it, as well as on the choroid in the vicinity of the papilla, ossification had been going on. Scattered over the whole choroid, particularly numerous in the anterior parts, were large and small so-called colloid excrescences of the choroid, some of them 0.2 *mm.* high. Pigmented flat and round cells, as well as irregular masses of pigment (fig. 7), were seen on and under them, and also surrounded by them. The excrescences themselves were arranged in distinctly concentric

layers, the inner ones homogeneous, of a glassy appearance, with sinuous sharp edges, the outer ones granular. Occasionally radiating striation was observed in these latter, the granules showing a stellate arrangement (fig. 9). On surface preparations the same changes in the pigment epithelium as in the case previously described were discernible. In several small, circumscribed, and larger spots the cells had lost their color, or the pigment was contained in larger, paler, reddish-brown granules (as in fig. 3). The cells had become rounder, larger, their nucleus pale and frequently eccentric in position. These cells had become agglutinated and coalesced, forming the smaller excrescences, in which remains of the cell borders were occasionally visible (fig. 10). The larger ones only showed the same stratification as that described in the first case.

The cells in the vicinity which still contained pigment had either become crescentic (from pressure), or there was an increased accumulation of pigmented cells and pigment masses. The first often contained two or more nuclei. In the posterior parts of the choroid, where ossification had been going on, the excrescences were surrounded by the osseous mass (similar to that shown by A. Meyer in *Arch. f. Ophthal.*, vol. xxiii., 4, plate v., fig. 31).

The colloid excrescences were first described as senile changes, and these were observed in acute and chronic inflammations of the choroid.

WEDL[1] describes them as colloid bodies of the choroid, but does not express a definite opinion as to their origin-only mentioning their analogy to the colloid masses in the thyroid gland.

DONDERS[2] expresses the opinion that they are the result of a colloid degeneration of the nuclei of the pigmented epithelial cells.

H. MÜLLER[3] considers them thickenings of the hyaloid membrane. He thinks that they are an *excretion* from the cells of the pigment epithelium.

RUDNEW[4] advances still another explanation. He sup-

[1] Pathological Histology.
[2] *Arch. f. Augenheilk.*, Bd. i., 2.
[3] *Arch. f. O.*, Bd. ii., 1.
[4] *Virchow's Arch.*, Bd. liii.

posed they were formed from white blood-corpuscles, which had emigrated and had undergone retrogressive metamorphosis. He supposed they had formed under the limiting membrane, through which they afterward penetrated.

LEBER, in his work on the amyloid degeneration of the conjunctiva,[1] and also later,[2] remarks that the formation of concentric excrescences of the hyaloid membrane can be explained most easily as being analogous to that of the cuticular formations, which are due to a cellular exudation at their surface.

SATTLER[3] mentions hyaline exudations on the inner surface of the hyaloid membrane, which take place in acute suppurative inflammation of the choroid. These exudations "are at first flat, slightly wavy, and raise the layer of pigment epithelium; later on there appeared on their surface globular or semi-globular excrescences, with either broad or constricted basis." Regarding their relation to the pigment epithelium he says: "I could never demonstrate a transition from cellular elements into such hyaline formations, and I believe that this process is but a rapid development of those excrescences whose slow growth is so common in old age."

WECKER[4] believes "that it has already been shown that the retinal epithelium does not take part directly in the production of these excrescences. Proliferation of the pigment epithelium is often noted simultaneously with an excessive development of these excrescences, but the view once expressed by Donders, that they are the result of colloid degeneration of the nuclei of epithelial cells, is no longer accepted." Besides considering the thickening of the hyaloid a senile process, Wecker also thinks it a peculiar disseminated choroidal inflammation, localized on the hyaloid membrane. He also mentions that these growths are often detached from their base and penetrate into the retina as far as the layer of nerve fibres. Their presence in the optic papilla was also mentioned by Iwanoff,[5] who ex-

[1] *A. f. O.*, vol. xix., 1.
[2] *A. f. O.*, vol. xxv., 1.
[3] *A. f. O.*, Bd. xxii., 2.
[4] Graefe und Saemisch, Bd. iv.
[5] *Zehender's klinische Monatsbl.*, Bd. vi.

plains it by saying that they had become detached from the layer of pigment epithelium.

ADOLF MEYER[1] endeavors to show that the colloid excrescences of the hyaline membrane are a product of the cells of the pigment epithelium, ALT[2] observes that the latter seems to be the most satisfactory explanation; cases are sometimes observed in which the excrescences seem to have been the direct result of degeneration of the pigment epithelium.

DE VICENTIIS[3] believes that these formations arise from a colloid degeneration of the contents of the cells of the pigment epithelium, but does not furnish any proofs for this.

In describing the anatomical condition of an eye operated on by Critchett for staphyloma of the cornea, DA GAMA PINTO[4] mentions some colloid excrescences, separated from the limiting membrane by a double or triple layer of cells, which he considers products of the proliferated pigment epithelium. From the specimens examined he could not decide whether the degeneration proceeded from the nuclei or the protoplasm of the cells.

In considering these excrescences of the choroid, it seems remarkable that they always develop only on the side towards the retina. If we regard them only as thickenings of the latter, this would demand explanation, because the limiting membrane of the choroid is not like that of Descemet, with one surface turned towards a cavity, where the conditions for proliferation of excrescences on that one side might be more favorable. We might, at least, expect that the thickenings would extend both towards the retina as well as towards the choroid. If it could be shown that these excrescences were formed by a peculiar condition from, or a degeneration of, the pigment epithelium, then their presence only on the inner surface could be easily explained. From this would follow that these formations could also be formed from pigment epithelium, when the latter is acci-

[1] *Arch. f. O.*, Bd. xxiii., 4.
[2] Patholog. Histologie.
[3] *A. f. O.*, Bd. xxviii., 1.
[4] *Movimento med.-chirurg. Estratto*, 1874, citirt nach *Nagel's Jahresbericht.*

dentally or otherwise detached from the hyaloid membrane. We could also assume that these growths might be formed in the retina itself, if cells of the retinal pigment emigrate into the retina. We see, therefore, that the presence of such hyaline bodies in the retina cannot always be explained by detachments from the limiting membrane of the choroid, but that they also may be formed *in situ*.

The assumption that these excrescences are formed from the pigment epithelium, was advanced, as has been mentioned above, by Müller, Meyer, and others, but their formation from cells was denied.

From the facts found in the two cases mentioned, it seems to me to be proven that the well-known excrescences on the choroid *may* arise from cells, in that the interior of the cell becomes filled with a transparent, homogeneous, or slightly granular substance, which either fills the whole cell, or pushes the nucleus to one side. During this process the cell becomes swollen, its contour rounded, the nucleus indistinct, and at last disappears entirely. By gradual coalescence, these enlarged cells form the colloid excrescences of the choroid. The process is similar to that of simple colloid degeneration.

Donders thought that the excrescences were the result of colloid metamorphosis of the nuclei of the pigment epithelium. But in our two cases, at least, it seems to us that they were formed by the whole cell undergoing a change similar to that of colloid metamorphosis.

The view that the excrescences are formed from an excretion of the cells on the limiting membrane, thus raising the pigment cells, seems to be supported by the fact that pigment cells are occasionally found on the excrescences. It also seems quite probable that there is a proliferation of pigment cells in the vicinity of the excrescences, because the cells frequently contain two or more nuclei. This renders it possible for pigment cells to be found superimposed on the excrescences, in that the growing mass pushes its way beneath the neighboring pigment cells, or the degeneration only affects the central parts of an adjoining mass of cells.

In the second case one could observe (as has also been shown by Donders) that pigmented epithelial cells are also formed (fig. 7) under the excrescences, so that the latter often seem to be surrounded by them. This would be very difficult to explain, if the excrescences were excretions of the cells on the hyaloid membrane.

To account for the remarkable size of some of these formations we must either assume that they have the property of greatly increasing in size by imbibition, or that an amorphous mass is formed from the animal fluids, accumulates about the nucleus of metamorphosed cells, and assists in increasing the size of the excrescences. I cannot omit to mention that the striation seen in figs. 8 and 9 gives the impression that it is partly caused by the contraction and condensation of the central parts; the peculiar outlines of the latter render this supposition probable, as the various shapes can be best explained by a supposed contraction of the centre. For the same reason, perhaps, this separation into layers is only seen in the larger excrescences, while the smaller ones are of a finely granular structure, seen only in the outer layers of the larger ones.

Most authors consider the colloid excrescences of the choroid merely an incidental secondary change. LEBER, on the contrary, is inclined to look on them as of more importance. He raises the question whether the changes of the epithelial layer (proliferation of cells, disappearance and new formation of pigment) are not caused by the growth of the colloid excrescences. He also mentions the fact that the sclerosed walls of the vessels, around which pigmented cells had accumulated, very much resembled the colloid excrescences.

If the latter, as in our cases, originate in the pigmented epithelial cells, then they are the result of a retrogressive metamorphosis of these cells, which opinion is confirmed by their occurrence in old age. In their vicinity there could also be a secondary proliferation of the pigmented epithelial cells, the products of which could also undergo degeneration, thus again increasing the size of the vesicles.

In closing I fulfil a pleasant duty in thanking Professors

WEDL and FUCHS for the inspection and approval of a part of the specimens.

Explanation of Figures on Plates III. and IV.

FIG. 1.—(HARTNACK, Ocular 3, Obj. Immers. 9.) Transverse section through the choroidal exudation, showing the cells lining the fissures.

FIG. 2.—(HARTNACK, Ocular 3, Obj. Immers. 9.) Masses of cells on the surface of a specimen of the exudation.

FIG. 3.—(HARTNACK, Ocular 3, Obj. Immers. 9.) Enlarged cells of pigment epithelium, which still contain some pigment.

FIG. 4.—(HARTNACK, Ocular 3, Obj. 8.) Non-pigmented round cells with pale nucleus, which have originated from those shown in fig. 3.

FIG. 5.—(HARTNACK, Ocular 3, Obj. Immers. 9.) A finely granular mass composed of closely aggregated degenerated cells, whose borders can still be partly recognized.

FIG. 6.—(HARTNACK, Ocular 3, Obj. Immers. 9.) A finely granular mass without any further structure.

FIG. 7.—(HARTNACK, Ocular 3, Obj. 5.) A large excrescence of the choroid arranged in layers.

FIG. 8.—(HARTNACK, Ocular 3, Obj. 7.) Smaller excrescence seen from the surface.

FIG. 9.—(HARTNACK, Ocular 3, Obj. 7.) Two similar ones with radiating striation in the peripheral layers.

FIG. 10.—(HARTNACK, Ocular 3, Obj. 5.) Single degenerated cells with others which have already coalesced, forming larger bodies.

REPORT OF CASES OF CONGENITAL ANOMALIES OF THE EYE.

By Dr. F. DIMMER,

ASSISTANT AT PROF. V. JÆGER'S CLINIC IN VIENNA.

(*With two colored plates v., vi., and fig.* 3 *on plate vii.*)

Translated by Dr. Morris Lee King, New York.

IN the following pages we will describe the opthalmoscopic appearance of several cases, doubtlessly congenital anomalies, which may create a general interest.

The first case is that of a young man, both of whose eyes, on ophthalmoscopic examination, presented a very peculiar appearance. He was a young student of the Talmud from Russia, about twenty-four years old, of weakly appearance, who presented himself on July 14, 1883, at the clinic of Prof. Arlt (whose assistant the author then was). He came to get advice about his right eye, which, about seven months previously, had, without apparent cause, begun to fail. At first he only noticed a cloud, which, however, disappeared after the lapse of a month. The gradually increasing loss of vision, which soon made it impossible to read, caused him to seek relief. Three years ago he had accidentally noticed that the vision of the left eye was very poor, but had not consulted a physician at that time.

The external parts of both eyes are apparently normal, and when fixing nothing abnormal is noticed. Examination with the ophthalmoscope revealed the following condition :

Left eye (plate v., fig. 1[1]) : Only the inner half of the papilla is

[1] The numbers in figs. 1 and 2, and in the text, give the refraction of those spots in dioptries.

distinguishable ; over this is a large vein, and several smaller vessels pass inward. At the lower inner edge there is a small, annular, shining spot. The outer half centre of the papilla is covered with a light whitish-gray mass, which extends outward about 2½ P. D.[1] In shape it is very much like a tent, as it seems to be resting on the papilla and retina, and projects into the vitreous humor. The most prominent part (+ 3.5 D.) lies over the lower outer part of the papilla and the adjacent part of the fundus. It is of a trapezium shape, with the longer side extending from the inner upper to the lower outer part ; it is of a light whitish gray color, with a bluish tinge, has an asbestos lustre, an irregular margin, and an uneven surface, which seems to be composed of numerous fibres, interwoven with each other. Somewhat above the centre there is a triangular plate (of the same color), which gradually becomes thinner and more transparent, until extending downward, forward, and somewhat outward, it ends in a fine sharp point (+ 8 D.). From all four corners and sides of the trapezium, numerous fine (by transmitted light gray) striæ radiate in all directions, forward also. (+ 8 and + 9 D.). These, therefore, enclose a funnel-shaped part of the vitreous humor, the mouth of the funnel being nearest the pupil. From all four corners of the most prominent part of the deposit, outward, downward, inward upward, and inward downward, grayish, membranous, transparent projections extend toward the fundus, somewhat like the seams in a tent-roof, and insert themselves at varying distances (up to 3 P. D.) from their origin in the retina. They do not begin at the level of the prominent mass spoken of, but at a somewhat deeper level, so that it would somewhat resemble a button, with a slightly contracted base. The process projecting outward gradually slopes away above, but its lower concave edge (convexity upward) projects in shape of a crescent, so that when the eye is rolled upward one can see underneath it. The whole projection is of nearly the same color and has the same surface as the quadrangular mass from which it springs. Through the superficial layers of the slope which passes upward, a fine blood-vessel can be seen running outward. On the prominent edges of the remaining membranous projections there are numerous fine vessels which finally pass into the fundus as retinal vessels. While they run in the projections just mentioned, they are crossed and accompanied by grayish-white striæ which seem to be thickenings of the membrane. In the process extend-

[1] P. D. = Diameter of papilla.

ing inward and downward are a small artery and vein ; in the lower one a small vein ; and in the one extending inward and upward there are several fine vessels, but whether arteries or veins cannot be decided. Above, just under the edge of the white mass, are seen two larger vessels, an artery and a vein. The latter passes toward the centre and can be traced on the tent-like growth, where it can be seen with + 1.5 D., and then disappears under the edge of the white quadrangular swelling. The lower process seems to arise from a yellowish-white linguiform spot, pointing downward and lying at the level of the fundus. This spot is about 2 P. D. long. Only its outer part, surrounded by a black pigmented margin, is visible, the inner part being covered by the grayish membrane of the projections. From the lower parts of this spot two finer vessels arise, and pursue their course close together within the membranous projection in an upward and forward direction. The lower one is a vein, the upper one an artery. After having run forward to a point where they can be seen with + 1 D., they turn outward and pass downward on the membranous process, and finally join the retinal vessels. The upper end of the bright spot lies close under the lower crescent-shaped edge of the outer process. In the angle between the two, a small, round, white spot is seen, of about double the diameter of one of the larger retinal vessels ; it has a slightly dark centre. It reminds one of the bright spot on the inner and lower edge of the papilla, which has already been mentioned. Externally to and at equal distances from the first are seen two similar bright round spots, but they are only indistinctly visible through the projections from the external membranous process. All three are at the level of the fundus, which latter shows a myopia of 1.5 D. A fourth spot, similar to the preceding ones, lies above the artery, which runs upward and outward. Quite a number of small black spots are seen internally, ranged in a semicircle about 2 P. D. from the papilla. The remainder of the fundus is of an even red color in its upper parts, but below and inward the choroidal vessels show through the pigment epithelium.

The right eye (plate v., fig. 2).—In the posterior cortical layers of the lens are seen several very fine opacities. Far in the periphery on the inner side a web-like grayish membrane is visible, which seems to be directly behind the lens. It is slightly tremulous. In the vitreous humor are seen some very fine punctate turbidities and some coarser flaky floating ones.

The papilla is not to be seen. From the point where it may be looked for a bright, bluish-white, conical mass projects diagonally inward and forward toward the edge of the lens. The myopia of the fundus is about 2 D. The membranous projections arise from it (as in the left eye) throughout the whole external and the lower internal portions; the internal one can only be partly seen above the upper edge of the conical mass mentioned above. Around the base of the latter the retina is detached for a considerable distance, and is of a grayish-red color. The retinal vessels arise, at a considerable distance apart, from the bright cone, at about the same height, and ramify partly in the detached retina, and partly within the projecting edges of the membranous processes. The bright conical projection gradually merges into the detached retina, the transition being rather abrupt above, while retinal vessels are seen coming from under its somewhat overhanging edge and ramifying in an upward direction. The cone passes into the inner projection with a sharp curve, concavity inward. At this point vessels ramify into the retina. At this part of the upper surface of the cone are seen many small, bright, white spots, and a fine grayish transparent stripe (not shown in the cut), which passes through the vitreous humor in an outward, upward, and forward direction. Not far from its anterior end there is a small spindle-shaped swelling (+ 10 D.). The detached retina is not distinctly tremulous. Immediately below it is seen a white stripe running outward and downward. Laterally from the region of the papilla —apparently in the retina—is a small white spot with a dark centre. 3–4 P. D. outward from the base of the cone which extends into the vitreous (taking the left papilla as an approximate measure) are seen a number of indistinct annular reflexes ranged about the region of the papilla, in crescent shape, which change their position and shape on moving the mirror.

Just to the inward from one of these, at the level of the fundus, lies a whitish spot with a darker centre. Similar spots are visible downward and inward where they are nearer, and downward and outward where they are farther from, the papilla. In the region of these reflexes the detached retina seems to gradually pass to the same level as the fundus. Just external to this, and also above the region of the papilla, are seen several irregular dark spots arranged in a manner similar to that of the reflexes.

With the right eye fingers are counted at a distance of one metre, and with the left one at a distance of two metres.

The measurement of the visual field with Förster's perimeter resulted as follows:

In the left eye (plate vii., fig. 1) there is a sector-shaped defect in the visual field in the upper portion, from the apex of which two smaller wing-like defects extend outward and inward. In the right eye (plate vii., fig. 2), just external to and very near the point of fixation, is a limited irregular defect, ending outwardly in a long, narrow point. In its vicinity the visual power is decreased, but not entirely lost, the white square on the perimeter being seen indistinctly (indicated in the cut by fainter shading). The periphery of the visual field is normal. The tension of both eyeballs is the same.

Both cases are apparently congenital anomalies. The ophthalmoscopic appearance reminds one, in some respects, of those described by Eversbusch.[1] As in the case described by him only part of the papilla could be seen in the left eye. In Eversbusch's case also, part of the retinal vessels appeared to come from a cord projecting into the vitreous humor, and passing over a bladder-shaped formation, lying in front of the lower part of the papilla and the neighboring fundus, into the retina. External to the papilla there was a sharply defined zone of a yellowish-white color, about ½ P. D. wide, and 1½ P. D. high. In the case described by me, this corresponds to a spot of the same color, lying external to the left optic nerve, and from which one of the membranous formations arise, from which vessels spring, which, after having run some distance in and upon the gray membrane, ramify in the outer portion of the retina.

In the right eye there was also a cone projecting into the vitreous, ending in several whitish-gray processes extending into the retina. In this case the papilla was entirely covered, and the retina detached.

To the analogous anatomical and ophthalmoscopic results given by Eversbusch (*l. c.*) may be added another similar case described by Hersing at the fifty-sixth meeting of German naturalists and physicians, in which (as in E.'s case) the cord could be traced to the posterior pole of the lens.[2]

[1] Mittheilungen aus der Königlichen Universitäts-Klinik, München.

[2] *Centralblatt f. Augenheilkunde*, Nov., 1883.

Eversbusch explains his case by assuming that, at the time the vitreous humor was yet present in but small quantity, certain changes, inflammatory perhaps, had taken place in the walls of the hyaloid artery, causing a thickening of the latter, and adhesion of the degenerated cord with the capsule of the lens. This thickened, degenerated hyaloid artery, extending from the optic papilla to the posterior pole of the lens, tended, of course, to prevent the natural growth of the vitreous humor.

With the increase of the latter the central part of the retina and the vessels connected with it was drawn forward by this hyaloid artery, which was attached to it, and formed the tent-like prominence seen in the cut.

Our case is different from that of Eversbursch, in that the remains of the hyaloid artery cannot be traced to the lens in either eye. We should, therefore, be obliged to also assume that at a later stage, after the tent-like expansion of the hyaloid artery into the retina had been completed, its connection with the posterior pole of the lens had been broken, so that only a conical projection into the vitreous humor was left, which also may have shrunken.

The bright spot surrounded by pigment, seen in the left eye below and external to the papilla, must be considered a rudimentary coloboma of the choroid. Above, there is also a sector-shaped defect in the visual field of this eye, indicating that the lower part of the retina did not fully develop. The remaining peculiarly shaped defect of the field about corresponded to the extent of the growth lying in front of the retina.

Formerly the patient was able to read with the right eye. Therefore part of the changes which were found must be considered as pathological. It seems to me to be very probable that the diminution of vision was due to the detachment of the retina which took place only seven months previously. How this occurred cannot be explained with any degree of certainty. The floating opacities in the vitreous of this eye allow us to assume that there was some later change in the vitreous combined with a further shrinkage of the hyaloid artery which brought about the detachment of the retina.

I cannot interpret the numerous round, white spots with darker centres which were so numerous in both eyes. It should be mentioned that it seemed as if the darker parts corresponded to a small depression, because they were very similar to the normal macula lutea in many eyes. In these light spots also the dark centre changed its position when the mirror was moved, but the whitish ring was not converted into a crescent.

The second case was that of a female aged twenty-nine years. She stated that about nine months previously she was lying on the right side of the face when she noticed that she saw very poorly with the left eye. She thinks she has since noticed that the left eye is dazzled by light, and that its vision has decreased somewhat.

In the right eye nothing abnormal is seen.

The anterior portion of the left eye was entirely normal, except that there is a small brown speck of pigment on the anterior capsule just internal to the centre of the pupil.

The ophthalmoscopic examination shows a very remarkable condition of things (plate vi.). The papilla is peculiar, in that it has hardly any blood-vessels. Close to its inner edge a thick artery and a narrower vein emerge. From this point they run forwards into the vitreuos humor and form a loop, the most anterior point of which can be seen with + 1. 5 D. They then again descend to the level of the retina and pass upward within it. The beginning of these two vessels, which seem to emerge from the papilla in an oblique direction, can be indistinctly seen passing from the inner edge of the papilla towards its centre. Besides these, a large vein begins at the inner edge of the papilla. Beneath this and several other smaller vessels which pass inward, is seen a whitish, sharply defined band, extending diagonally from above and outwards downwardly and inwardly. On the papilla itself only one small blood-vessel is visible, whose connection with the arteries or veins ramifying above cannot be made out. It terminates upon the surface of the papilla near the outer edge.

Proceeding from the papilla, and partly covering its lower edge, is a very delicate membrane with grayish striæ, on which rests the loop formed by the vessels described above.

Bluish-white bands emerge from within and pass downward, inward, and forward into the vitreous. One of them extends upward and outward, and when seen from in front forms a crescent-shaped

growth lying on the inner side of the papilla, with its convexity inward; its upper end extends farthest forward (+ 8 D.). The remaining white bands can still be distinctly seen with + 2. 5 D. at a distance of 2–3 P. D. below the papilla. Below the optic disc they diverge, leaving a circular opening between them, through which the red fundus and several blood-vessels are visible, whose origin and course cannot be distinguished. Several smaller blood-vessels are seen external to the whitish bands which form the outer boundary of the round opening, lying in the retina and passing outwardly. At a distance of more than 3 P. D. from the lower edge of the optic disc a large artery, accompanied by a larger vein (+ 3 D.), emerges from the membranous net-work lying in the vitreous humor, which net-work rises from the retina even at a considerable distance from the papilla. These blood-vessels descend over the latter and ramify in its outer portion.

Beneath them (in the retina) are seen several bluish-white branching bands, apparently cicatricial. In the lower inner part, the membranes which arise from the retina and lie in the vitreous assume a peculiar configuration resembling lattice-work, so that round or oblong openings exist, through which the fundus is visible. The latter appears rather of a yellowish than of the usual red color. The pigmentation is very irregular, and occasionally choroidal blood-vessels can be recognized with great distinctness. In the lower part the grayish-white masses gradually slope away into the retina. In the inner and lower part, however, they extend very far forward, and in the outermost parts of the periphery accessible to the ophthalmoscope a large, very light, nearly whitish spot is seen through the open spaces, whose outer edge is formed by a well-defined dark line.

The tension of the eye was normal. Fingers were counted at a distance of two metres. In the upper and outer part of the visual field there was (plate vii., fig. 3) a large triangular defect extending nearly to the point of fixation.

The above-described condition of things cannot be considered as any thing else than a congenital anomaly. In the literature of the subject I am unable to find any thing analogous to it.

In many cases of coloboma of the choroid and the vitreous, there were tendinous cords, arising from or just below the optic disc, extending to the lower edge of the lens and

lying in the vitreous fissure. They have been compared to the crest in the eyes of birds.[1] My case reminded me in some degree of those referred to.

Even in the places not covered by these membranous growths, the retina was not developed normally. If it had, the defect of the whole field of vision, corresponding to the whole lower part of the retina, could not be explained. The choroid must be present, though perhaps not fully developed, because of the choroidal blood-vessels seen in the periphery. It only seems to be wanting in the very bright spot lying in the periphery.

The whole must probably be considered the remains of the embryonic connective tissue developing into the vitreous humor, in the ocular fissure, which has never fully closed. The peculiar origin of the retinal vessels is remarkable, as they arise partly at the edge of the papilla and partly from the membranes lying in the vitreous.

The origin of the latter blood-vessels can only be guessed at. There is nothing to support the view that they originate in the choroidal blood-vessels, and considering the great distance from the papilla at which they appear, it is not very probable that they come from the central retinal blood-vessels.

[1] Stellwag: *Zeitschrift der Gesellsch. der Wiener Aerzte*, 1854. And Wallman: *Zeitschrift der Gesellsch. der Wiener Aerzte*, 1858.

STUDIES ON CHROMATOKINOPSIAS.

By Dr. G. MAYERHAUSEN, Munich.

Translated by Dr. C. Zimmermann, New York.

(*Plate ii.*)

I HAVE tried in vain to discover, whether the subjective phenomena, which I called "Chromatokinopsias," were known in former times. Wheatstone [1] was undoubtedly the first who studied the matter, as an expert, and in a really scientific way. This author observed that all parts of a red and green carpet pattern seemed to move on illumination with gaslight, if casually glanced over. The same occurred more or less with patterns of several other colors, which he combined for that purpose, but with none so markedly as with red and green. Wheatstone explains it by saying that the eye retains its sensibility for different colors for a different length of time. Brewster,[2] studying the same phenomenon, at first observed it only in red and green, until Wheatstone demonstrated it for him in red and blue. Later on the same was reported by others, with an explanation founded upon the fact that blue appears green by yellow gaslight. The phenomenon was called "fluttering hearts" (*flatternde Herzen, cœurs dansants*), from the shape of the colored figures pasted upon a colored background (perfectly indifferent, of course, for the effect), which were originally used for experimentation.

[1] *V.* L'Institut, 1re section 1845, pag. 75. Sur un effet singulier de juxtaposition de certaines couleurs dans des circonstances particulières. (xiveme session de l'associat. brit. pour l'avanc. des sciences, tenue à York en Septembre, 1844.)

[2] L'Institut, *l. c.*

In order to give an explanation of the phenomenon, Brewster calls attention to an experiment showing that any fixed object seems to move upon its background, if the intensity and position of the source of light constantly change. This experiment consists in rapidly moving a lighted candle in front of a statue in all directions. The constant change of light and shadow produces a succession of varying impressions, the seeming mobility of the statue's features lending to them the appearance of life. In the phenomenon of the fluttering hearts the mixture of red and green, which are alternatly perceived, directly or as after-images, on moving the eye, or the background, produces the impression of alternating lights and shadows, and thus that of motion. In a report on these observations, in 1847, Brücke[1] says that with Du Bois–Reymond he accidentally observed the same phenomenon under similar conditions. But he does not seem to agree with the two English physicists, adding: "No satisfactory explanation has yet been given." Taylor[2] observed the illusion only in red dots on a blue field, and *vice versa*. His explanation is similar to Brewster's. The point which seems to move, when red, appears to be edged by a shadow corresponding to the direction of motion; when blue, to be surrounded by a kind of aureola. These momentary phenomena cause differences of aspect, analogous to those we observe in a body under shifting illumination. Dove,[3] in 1853, gave an explanation of the phenomenon differing altogether from the former. Considering the imperfect achromatism of the eye, he explains it by saying that the lines of convergence of both eyes, in distinct vision, form a somewhat more acute (?) angle for red light than for blue, so that clearly defined blue surfaces appear nearer (?) than equally distant red ones.[4] He says that upon

[1] In "Die Fortschritte der Physik im Jahr 1845," 1 Jahrg., edited by G. Karsten, Berlin, 1847, page 223.

[2] *V.* the report in *Archives des sciences phys. et natur.*, vol. x. Genève, etc., 1849, p. 304. "Sur la théorie des cœurs dansants," by Mr. Henry Taylor.

[3] Dove, Dar stellung der Farbenlehre und optische Studien. Berlin, 1853.

[4] Although it is true in general that our accommodative efforts vary for different colors, in this case Dove's premises were false. It is evident, *a priori*, that we must both accommodate and converge most for the least refrangible rays (viz., the red), and *vice versa*, so that red surfaces seem nearer to us than those whose color lies more toward the violet in the spectrum. *V.* Brücke's paper:

moving the plate in its plane, the heart and the background describe tangents of equal length, the radii of the circles being unequal. The angular velocity of one appeared therefore different from the other, and both objects, image and background, seemed to overlap each other. But it is presupposed that the background is limited in extent, otherwise its movement within its plane would be perceived. Oppel[1] replies that, admitting the correctness of Dove's explanation, the phenomenon must be most marked in colors farthest apart in the solar spectrum, viz., in red and violet. He could not discover, however, that it was more marked than in yellow and blue, and it proved even more marked in intense orange on a dirty yellowish-gray background, and in pure yellow and green; *i. e.*, in adjoining colors. Therefore he thinks the main cause must be attributed to the action of subjective spectra, although "he does not question the correctness of Dove's principle." In general he adopts Brewster's and Taylor's opinion, although apparently not acquainted with it. To Helmholtz ("Physiol. Optik," p. 383), red and blue seemed most effective, and he explained the phenomena by saying that the impression of light produced in the eye by different colors does not appear and disappear with equal rapidity, and that therefore the blue appears to lag behind the red in the plane, described by the plate.

In view of these so widely differing explanations, the interest which I felt induced me to make a series of experiments myself. I performed them with 40–50 different combinations of colors; *i. e.*, I changed, not only the colors themselves, but also their shades, whereby an infinite variety of combinations was produced. By repeating each experiment several times after intervals of days and weeks,[2] I collected several hundred observations. I found colored

"Ueber asymmetrische Strahlenbrechung im menschlichen Auge," in Vienna Acad. Transactions, math.-natur. class, vol. lviii, part 2, xx. meeting.—THE AUTHOR.

[1] J. J. Oppel: "On the Phenomenon of 'Fluttering Hearts,'" in the Annual Reports of the Physical Society of Frankfort-on-the-Main, for 1853–4, p. 50.

[2] It is advisable to promptly suspend the experiments as soon as pain in the eyes and headache are felt. This often happens after a few hours, and leaves—according to my own experience—a more or less lasting irritability of the eyes. Helmholtz makes the same statement.—THE AUTHOR.

papers admirably adapted, though I used also colored glasses and bits of cloth. I cut paper rectangles 8 *cm.* long and 6 *cm.* wide, on each of which I pasted a disc 1 *cm.* in diameter, and then observed their apparent movements, using the borders of the background as objects of comparison. I preferred, for the sake of comparison, black discs of the same size, arranged at different distances from the colored ones. Sometimes I put several colored discs near the black on the same ground, for better comparison. Then two leaves of different color were arranged close to each other, so that there was only a single straight and sharp line of contact, and the one color was not, as in the first series of observations, entirely surrounded by the other.

It does not seem superfluous to state in detail some facts relating to the seeming motions. They may be noticed in the discs by moving the background, though their rate differs from that of the latter, so that they produce the impression of actual movement upon the background. They present themselves differently according to the way in which we move the background. For the sake of simplicity, I shall call these voluntary motions of the background primary, the apparent motions secondary. If the primary motion takes place exactly in the plane of the plate, no matter whether this be horizontal, vertical, or inclined, the secondary motion takes place in the same plane, and corresponds in direction with the primary, if this be in a straight, curved, or broken line. The same effect is obtained (in these motions in the plane of the plates) when the plate remains at rest and the eyes are rotated in different directions. Wheatstone first observed the phenomenon in this way. I then tried whether there would be any thing analogous in motions of the plate perpendicular to its plane. This occurred as expected, and in a more striking manner than before. By moving the plate at a suitable velocity, in a direction perpendicular to its plane, toward and away from me, I saw, according to the amount of excursion, the disc alternately floating several centimetres above or before the background, and sinking back again, sometimes, under certain circumstances, even going behind the latter. The

secondary motion changes in a corresponding manner, if the direction of the primary movement forms an angle with the plane of the plate, or if this primary movement is that of fanning or rotating, so that certain parts of the figure make larger excursions than others. The real "fluttering" of the disc is perceived by combination, conscious or unconscious, of both movements. Conical vibrations are brought about by a circular concussion of the plate, which causes, besides, an alternate elevation of the plate from its plane. Oppel likens them, quite happily, to the movements of a thick fluid in a shallow bowl, which is given a revolving motion by agitating it. In adjoining colored plates with a sharp line of separation, the secondary movements are most noticeable when the primary movement is in the plane of the plates, and at right angles, or nearly so, to the line of junction. The two colored plates seem to overlap each other alternately at the line of junction, or the line of junction seems to change its position, so that when both plates are equally broad, now the one, then the other, appears broader. These apparent movements are more difficult to be observed in movements of the plates perpendicular to their plane, but with proper illumination I have sometimes had the impression, as if I made fanning movements with the portions of one plate next to the line of junction, whenever the point of fixation was to the right or left of that line. If the primary movements are not exactly perpendicular to the plane of the plates, or if I look obliquely at them, the effect of the lateral movement is added. The illusion is, however, more striking if one color is entirely surrounded by the other.

Under certain circumstances these phenomena are even yet more marked. They are more striking under weaker illumination, than otherwise. The illumination by gaslight or other artificial means has no special influence, although Wheatstone thought it was essential, since he could not perceive the phenomena by diffuse daylight. So, too, Brewster could not see them, even by artificial light, if furnished, for instance, by a larger number of candles, or by reflection from all sides; but they became visible by daylight,

on illuminating the colored surface by a small opening in the shutters of an otherwise dark room. Oppel states also, that the effect is very slight when a candle or other source of light is used at a very short distance, whereas it increases to a certain extent with the distance, but decreases again after a certain limit is reached. I see the phenomena almost equally well in twilight or by full daylight, if I admit only a small quantity of it, or at night at a moderate distance from a kerosene-oil lamp; but quite as well close to the light, if its power of illumination is but slight, or if I diminish its brightness by a screen. Smoked colored glasses, in front of the eye, have the same effect. The phenomenon does not occur, if the obscuration is too great, so that the color-perception falls below a certain limit. It follows undoubtedly from all this, that a more or less considerable diminution of clear vision as also of color-perception favors the phenomenon. Secondly, the effect—*ceteris paribus*—is more marked to a certain degree in eccentric fixation. Different reasons are given for this by different authors. Wheatstone, for instance, thinks it must be attributed to the peculiar faculty of our retina, to perceive differences of light more in its peripheric than in its central portions. Dove thinks it probable, that the differences of angular velocity of different colors are more marked in eccentric fixation, and supports it by the observation that, by looking very obliquely to one side, in a dark room, he saw a narrow slit, brightly illuminated from outside, as a spectrum, which he could not perceive by direct fixation.

I explain the subject in a somewhat simpler manner. There may be other points involved, but the chief factor in eccentric fixation lies in the diminution of clear vision, or of color-perception, which is also a consequence of the diminution of illumination, mentioned above.

As Donders, Landolt, and others have sufficiently proven, the peripheric portions of our retina act in the same way in regard to color-perception as the central in regard to diminished illumination, and, *vice versa*, the central analogous to the peripheric in increased illumination. My observation agrees perfectly with this, that, with a certain illumina-

tion, we see the phenomenon eccentrically, but not centrally, the latter being possible only with diminished illumination. With a certain diminution of the illumination (or removal of the light to a greater distance) we do not see it by eccentric, but by central fixation. With still further diminution of the intensity of the light, the illusion disappears even with central fixation. Besides, a certain degree of brightness of the disc seemed to increase the effect. I do not intend, to enumerate all my experiments, or the color-combinations by means of which I made my observations. I shall mention but two, in which the effect shows itself in an equally high degree, and in which the phenomenon shows so clearly with proper illumination, that all doubt is excluded. One combination is light grass-green upon carmine iii. as background (according to Jung's Heidelberg color-book, *vid.*, fig. 1, plate ii.); the other is light neutral gray, upon orange iv. as background (according to the same system, *vid.*, fig 2, plate ii.). This latter combination is very effective in producing the illusion, but is not even mentioned by the authors referred to; it is far superior to the red-blue combination, which, rather strangely, Taylor states to be the only one capable of showing the phenomenon.[1] A reversal of the arrangement of the colors has not an equal but still a sufficient effect.

Both combinations above mentioned show the phenomenon best when two centimetres distant from a common kerosene-oil lamp provided with a shade of milk-glass. For instance, looking at fig. 1, plate ii., I see the grayish-green after-image of the disc very clearly defined, exactly at the same place where, on starting, the green disc had been, if I move the plate with a proper velocity, easily found in a few experiments, from left to right and then ceasing, avoiding all sudden movements; an excursion of 1–2 *cm.* is sufficient. With a certain velocity, and with a certain amount of motion, I see the disc and its after-images close to each other upon the background for a moment, sometimes separated from each other by a portion of red ground. This lasts only a moment; then the after-image moves toward the disc

[1] The gray letters on some of Pflueger's plates with red ground show the phenomena very plainly.—THE AUTHOR.

and unites with it. The same occurs at the opposite side, if I move the plate to the left—viz., I see the after-image at the former place of the disc, *i. e.*, to the right of the latter; then it quickly moves to the left and joins the disc again. The after-image follows always in the direction of the voluntary movement of the plate. If this voluntary movement of the plate is repeated several times in both directions, the after-image does the same. The after-image is most marked at the point where the movement is reversed, since the object remains there longest. It is much less marked and indistinct along its line of motion. If the movements of the plate from side to side are very rapid, the after-image does not seem to end its movement on its coalescence with the disc, but to go beyond it, as it is there when the plate is rapidly drawn back; but we are unable to determine whether this withdrawal is an earlier act on account of the rapidity of its motion. The sudden appearance of the after-image at the other side of the disc gives rise to the impression that it had continued its movement beyond the latter. Since we mistake the after-image for the disc itself, the latter seems to make greater excursions in every direction than the plate really does; therefore it seems to shift toward the margin of the plate, or toward another object (black disc [1]), situated to one or the other side of it. The phenomena are of course analogous when the movements take place in other directions than in the plane of the plate.

What is the nature of the after-image? As mentioned above, it appears grayish-green if it is entirely upon the red background, but even if it is partly upon the red background and partly upon the disc, the latter portion appears grayish-green, with a somewhat darker hue than the portion upon the red background. The remaining portion of the disc appears red, mixed with gray, which easily escapes our attention, especially under diminished illumination, since we devote our whole attention to the apparent movements of the predominating after-image. I explain it as follows: The after-image is a positive one, such as every object moving at a certain rate of speed produces. Originally it has the same

[1] In the examples mentioned, a black object may be used for control, but even black shows apparent movements upon ultramarine blue.—THE AUTHOR.

color as the green disc, but changes to grayish-green, due to the influence of the inducing color, the red of the background (in a more general sense). This effect is of course more marked in the portions of the after-image falling upon the red background itself as the result of the movements. For the same reason the disc itself—that is, the portion not covered by the after-image—appears red, mixed with gray. A certain intensity of illumination is necessary for every special case, in order to recognize these differences of color. This is impossible with less than a certain definite amount of illumination—for instance, in rather advanced twilight; the whole background then retains a quite uniform color, but the movement of the disc is equally noticeable. Under an appropriate illumination by a kerosene-oil lamp, no trace of these differences of color can be detected (fig. 2, plate ii.), but the phenomenon is mostly well marked. Therefore, some authors are wrong in thinking the phenomenon dependent upon these differences of color, which are irrelevant. I cannot discuss here all possible cases of color combinations, so I have only presented two of the most typical.

I shall be brief with regard to movements perpendicular to the plane of the plate, since the same changes take place, only modified by the conditions. If, fixing the plate, I rapidly bring it nearer, the size of the retinal image increases. That of the after-image is dependent upon the size of the retinal image[1]—the point of fixation (convergence) remaining the same—*ceteris paribus*. If I remove the plate quickly, the larger after-image seems to remain for a moment in the position formerly occupied by the disc; it soon becomes smaller, and, apparently passing through the intervening space, unites with the object itself. The excursions of the after-image and of the disc itself seem to be greater than those of the plate, since the moment can not be precisely determined when the direction of the movement is reversed. The explanation is the same as that given above; in the same way the various combinations of movements within the plane of the plate with those out-

[1] The reason why these apparent movements occur quite as well in monocular as in binocular vision is that we converge correctly, even if we close one eye.—THE AUTHOR.

side of it, or of adjacent colored surfaces, will be easily understood, *mutatis mutandis*. As long as we have no exact explanation of the phenomena of after-images we are only able to describe the facts, in answer to the question: What in general should be the combinations of colors in order to best exhibit the phenomena? Aubert considers even the expressions "continued excitation" and "fatigue" a "sometimes convenient circumscription of the facts," the circumscribed facts not being explained. It would be undoubtedly of great interest to investigate how individuals, with a congenital or acquired diminution of color-perception or complete color-blindness, would perceive these phenomena. The "chromatokinopsias" might be made use of as a very simple means of diagnosis, if definite facts should be established. I shall endeavor to make such experiments at a proper time and report upon them.

A CASE OF MICROCEPHALUS WITH MICROPHTHALMUS.

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(*With plate i.*)

Translated by Dr. A. SCHAPRINGER, New York.

THE case detailed here is that of Emma Blaser, aged eleven, of Luetzelflueh, Switzerland, who was an inmate of our clinic from November 23 until December 4, 1882. She was seen again in June, 1883, and exhibited to the Medico-Pharmaceutical Society of Berne. The microcephalus was well marked, though only one of a medium degree, and of the variety called trigonocephalus.

The measurements of the skull were made by Professor Flesch, who has had considerable experience in this kind of work, and who was assisted by Dr. Freund. The method employed was that of Virchow and Rieger.

I am indebted to Professor Flesch for the outlines of the head, reproduced in plate i., and for the following data.

" Hair blonde, eyes brown, the same as her mother. Length of body, 133 *cm.*; height to hip, 78.9 *cm.*; length of arm, 57 *cm.* Measurements of skull: greatest length, 158 *mm.*; greatest breadth, 130 *mm.*; horizontal circumference around occipital protuberance and eyebrows, 476 *mm.*; circumference from glabella to occipital protuberance, 290 *mm.*; from glabella to lowest point of occiput between muscles of neck, 328 *mm.*; frontal circumference, above external auditory canals, 299 *mm.*; breadth of skull between zygomatic arches, 100 *mm.*; between openings of audi-

tory canals, 136 *mm.*; height of face, 109 *mm.*; of nose, 59 *mm.*; breadth of face between rami of lower jaw, 86 *mm.*; length of right half of lower jaw, 73 *mm.*; of left, 71 *mm.*

"The two lateral halves of the skull are asymmetrical, the left being less developed anteriorly, the right less developed posteriorly. The line of circumference shows a marked indentation in the temporal region of the right side, and consequently the greatest breadth is found far back. The most striking feature of the head is the narrowness of its frontal portion, which constitutes it a trigonocephalus. The general measurements of the head are not excessively small, except those of the frontal segment, the diminutive proportions of which make it evident that there must be a deficient development of the brain."

The microphthalmus, like the microcephalus, while not of high degree, was well marked and unmistakable. The corneæ were not circular, but transversely elliptical, the vertical diameter of each being 9 *mm.*, the horizontal 10 *mm.*

There were two symptoms present which rendered the examination of the eyes difficult and incomplete—very violent horizontal nystagmus and complete absence of central fixation. The little girl habitually held her head inclined to the left, often to such an extent that the bridge of her nose was parallel with the line of her shoulder, her eyes being rolled to the extreme right, and at the same time considerably either above or below the horizontal meridian.

The acuteness of vision could not be determined in either eye, owing partly to the great imperfection of the visual power, and partly to the deficient development of her intellect. It was evident, however, that she used only her right eye for fixation, fixing not with the macula lutea of this eye, but with a portion of the retina, situated a considerable distance to the outer side of the macula, and either above or below the horizontal meridian. The refraction of the right eye, as determined by keratoscopy, proved to be slightly myopic (1 or 2 D.).

Both corneæ were perfectly transparent. The iris of either eye was normal in every respect, except as to size. There was no coloboma, the pupils being normal in shape, size, and position. Atropia caused only incomplete dilatation of the pupils.

The lens of the right eye was completely transparent. That of the left showed partial posterior cortical cataract, which will be described further on, and on account of which I performed a

small pear-shaped iridectomy on the nasal side. Although the optical conditions of the eye were greatly improved by this operation, her visual power did not seem to increase.

In the background of both eyes were numerous irregular yellowish-white atrophic patches, varying in size from a mere dot to that of the optic disc, apparently the sequelæ of intra-uterine retino-chorioiditis. There were also numerous oblong collections of dark pigment, the length of some being equal to five or six times the diameter of the disc. The most remarkable feature, however, were large greenish-blue spaces of oblong form, showing a reflex like that of mother-of-pearl.

In both eyes there was a coloboma of the sheath of the optic nerve and of the choroid on the temporal side of the optic disc. In the right eye the shape of the disc was a transverse oval. It was well defined by the scleral ring above, below, and on the nasal side. On the temporal side the vaginal ring was absent, and its place was taken by translucent nerve-substance. Here the boundary line of the disc was less distinct than normal, and showed indentation which made the disc appear slightly heart-shaped.

The choroid receded from the lower periphery of the disc, less on the nasal than on the temporal side ; hence the appearance of a spherical triangle with an acute angle at the nasal portion of the disc. Passing from the nasal to the temporal side of the disc, the distance of its periphery from the choroidal margin increased, and the choroid, instead of rising on the temporal side in correspondence to the outline of the disc, kept its direction outward and downward, being sharply defined for some distance only. At the upper periphery of the optic disc the choroidal border receded from the disc, as below, continuing directly outward and upward across the fundus, instead of lining the temporal border of the papilla. The two sides of the choroidal coloboma formed an angle of 50° to 60°, which was bisected by the horizontal meridian of theglobe.

The coloboma did not show the bright yellowish-white color of the bare sclera throughout, but only in areas which were divided by accumulations of pigment distributed with a certain degree of regularity. The pigment lay in vertical streaks slightly curved, the convexity of the curves looking toward the temple. This regularity was most striking in the immediate vicinity of the disc, so that the lower crescent appeared to be composed of a number

of alternately black and yellow vertical arches. This regularity was less marked, however, on the temporal side.

At a distance of from 6–7 P. D., and situated at its outer side, there was a curved oblong band running vertically, its length equal to 6–8 P. D., and its breadth to about 1 P. D., which showed a brilliant greenish-blue reflex. On the outer side of this band ran a streak of very black pigment, having at its broadest portion a breadth equal to $\frac{1}{4}$ P. D. On the outer side of this streak the choroid showed the same appearance as in the rest of the background, being studded with choroidal exudations, atrophic patches, and numerous accumulations of pigment.

The arrangement of the retinal vessels was strikingly abnormal. The main vessels did not run upward and downward, but they all ran outward and formed an angle of 45° to 50°. One small vessel ran upward and inward upon the papilla, and another small one downward and inward. Upon reaching the border of the disc both suddenly turned and took an outward course, only to change it again after running a short distance by returning to the disc and traversing it from without inward. The two vessels then crossed each other, presenting the appearance of a bow-knot.

The fundus of the left eye presented changes more pronounced and similar, with the following exceptions: There was also a coloboma of the sheath of the optic nerve and of the choroid. The sides of the choroidal coloboma, however, did not diverge, but ran parallel to each other. They could not be traced further than the equator, on account of the cortical opacity of the lens. The optic disc was not quite so small, but it was more elliptical, its vertical diameter being somewhat smaller than that of the right disc. The color of the coloboma was darker, with an occasional greenish shimmer, and extensive and irregular accumulations of pigment. The portions of the choroid immediately adjoining the coloboma showed little change, but toward the periphery it had undergone extensive changes. Here, as well as in the other eye, the atrophic patches were greatly outnumbered by the proliferations of pigment. There was also an extensive area of a greenish-blue color, resembling the tapetum of animals. Unfortunately, it was not possible to thoroughly study all the details.

The retinal vessels were parallel and ran directly outward, following the direction of the sides of the choroidal coloboma. There were no retinal vessels running in any other direction.

The calibre of the retinal vessels seemed to be smaller than

normal, more markedly so in the left eye than in the right. The arteries and veins could not be distinguished from each other.

The color and translucency of the right optic disc was about normal, but the left was as opaque as in cases of advanced retino-choroidal atrophy.

The opacity of the left lens mentioned above was situated mainly in the posterior cortical substance. It began at the posterior pole, and was of such shape and size that it just obstructed the pupillary area when looked at from in front, before the iridectomy was performed. From the posterior pole the opacity extended outward as far as the equator, forming an isosceles triangle with the base at the equator. The rounded angle at the posterior pole was about 40°. The opacity did not cease at the equator, but extended for the distance of 1.5 to 2 *mm.* into the anterior cortical layer. There was evidently a causal relation between this opacity of the lens and the choroidal coloboma, as evidenced by the correspondence of their location.

It does not seem to be difficult to find an explanation for this anomaly of development. Manz, noticing the frequent coincidence of coloboma of the uvea and microphthalmus, suggested that microphthalmus might be caused by intra-uterine chorioiditis. This supposition was confirmed by Deutschmann,[1] who had the opportunity of making an autopsy of such a case. The present one also tends to corroborate the hypothesis of Manz.

In his review of Deutschmann's paper in *Nagel's Jahresbericht* Manz says: "The supposition appears to be very plausible that intra-uterine sclero-chorio-retinitis will cause incomplete closure of the fœtal fissure, or will cause it to reopen if already closed. This hypothesis will certainly be generally accepted if corroborated by the anatomical examination of a few more cases of coloboma bulbi. One thing, however, still remains unexplained, namely the fact that the inflammatory changes are confined to the neighborhood of the ocular fissure."

Our case evidently serves to fill a gap here, as in it the choroidal changes, though most striking in the neighborhood of the coloboma, were well marked throughout the whole fundus.

[1] *Zehender's klin. Monatsbl.*, Bd. xix., p. 112.

The course of the retinal vessels was very peculiar and such as I had never before observed in the human being. It can be explained by assuming that the cicatricial contraction of the choroidal coloboma caused traction upon the retina, dragging its upper portion downward and the lower upward. The indentation of the outer periphery of the right optic disc can also be explained by the cicatricial contraction of the sides of the coloboma. This theory seems to be corroborated by the concentric arrangement of the pigment deposits in the fundus of the right eye. The elliptic form of the cornea was another feature for which the theory of cicatricial contraction affords a natural explanation. In our case, where the direction of this contraction was vertical, the greater diameter of the cornea was horizontal, whilst in the case published by Deutschmann, in which the direction of the coloboma was downward, the lesser axis of the cornea was horizontal.

The outward direction of the coloboma in this case was unusual, the coloboma being usually directed downwards. This unusual feature can be explained by the hypothesis that the fœtal cleft is first directed outward, and that a gradual rotation of the globe changes this direction downwards, and that in the present case the globe for some reason or other had not performed this rotation.

Frau A. Blaser, æt. forty-four, the girl's mother, showed an abnormal condition of the skull as well as of the eye similar to that exhibited by her daughter only somewhat less marked. The greatest horizontal circumference of the skull was 530 *mm.*, the left half being larger by 5 *mm.* than the right. Circumference around glabella and occipital protuberance 284 *mm.*, over gabella and muscles of the neck 310 *mm.*, arch over auditory orifices 360 *mm.*, length about 170 *mm.*, breadth about 137 *mm.*

Both corneæ were somewhat smaller than normal and slightly elliptical, the vertical diameter being 10 *mm.*, the horizontal 11 *mm.* No coloboma. Choroidal ring at outer periphery of optic disc very dark.

Frau Blaser has another daughter who is said to have perfectly normal eyes. She has had a third child, which died, two hours after birth, from hydrocephalus.

Frau St., æt. thirty-five, a sister of Frau Blaser, has a normal skull, but a slight microphthalmus, the diameter of either cornea being only 10 *mm.*

O. s. M. o. 75 and As. m. 0.5, axis vertical, V = 0.5
O. d. M. 1 and As. m. 0.5, axis vertical, V = 0.75

Ophthalmoscopic appearances normal.

Frau Blaser's father is also said to have abnormal eyes, but he could not be prevailed upon to present himself for examination.

Explanation of Plate No I.

Projection of shape of head according to Rieger and Virchow (Sitzungsber. d. phys.-med. Ges. in Würzburg, 1882, p. 96).

————————Sagittal Arch (Glabella and Occipital Protuberance).

— — — — Frontal Arches:

1. Breadth at auditory orifices.
2. Arch between auditory orifice and glabella.
3. Occipital arch, between auditory orifice and occipital protuberance.

These three arches stand vertically upon the horizontal plane.

—·—·—·—·Horizontal Planes:

4. Through occipital protuberance and glabella.
5. A parallel plane two *cm.* higher than the preceding.

REPORT OF CASES FROM PRACTICE.

By Prof. Dr. C. SCHWEIGGER.

Translated by J. H. Shorter, M.D., New York.

I.—*Cases of commotion of the optic nerve.*

Case I.—Thodore E., eight years old, was brought to me on Oct. 9, 1882, on account of blindness of left eye. Externally there was nothing to be remarked, and ophthalmoscopic examination found all appearances entirely normal. The iris of the left eye moved freely in the accustomed way in conjunction with that of the right; but with the right eye closed the pupil of the left remained wide and fixed. Not the slightest reaction to light was present, and even the most concentrated light from a gas flame by a strong convex glass was not perceived.

On the 6th of October the boy, when playing, fell and struck with his face on the blunt end of an iron tool which he held in his hand at the time. In the region of the upper jaw, just opposite the first left molar tooth, there was a superficial cutaneous wound, which did not penetrate to the cavity of the mouth, and at time of the examination was almost entirely healed. The blindness was perceived immediately after the injury. No cerebral manifestations had appeared.

As complete blindness following this had already lasted for three days, I regarded the prognosis as extremely unfavorable, and recommended leaving the matter to take its course. The patient followed this advice.

The blindness remained for several days unchanged, then perception of light appeared, and at the next examination, on October 20th, the acuity of vision was at one metre $\frac{1}{8}$; at five metres No. 24 was recognized. The eccentric vision seemed somewhat indis-

tinct, only outwards and downwards. The pupillary reaction and ophthalmoscopic appearances were normal.

It is naturally much to be lamented that injection of strychnine was not once tried. This flower of therapeutics would now be richer by one more so-called clearly demonstrated case. When will it ever become customary in therapeutics to reason in a scientific manner?

But one thing should certainly be clear—namely, that we can speak assuredly of therapeutic results only in so far as we are entirely sure of the prognosis. Only when we know what may happen without our therapeutics, can we judge what we really accomplish by them. Fortunately a great many things improve without our interference.

I had not dared to hope that an absolute blindness with abolished perception of light could heal with restoration of useful vision after lasting for three days. My prognosis was incorrect, but in this case therapeutics would have accomplished nothing except to add a second error to the first one.

The further course brought still another surprise. On December 2, 1882, the acuity of vision was as before $\frac{5}{24}$. No. 0.6 was read fluently, fingers could be counted eccentrically in all directions, colors were correctly recognized, but the optic nerve was considerably paler than that of the right eye. At the last examination, on February 3, 1883, the conditions were unchanged.

Case 2.—Previously I had opportunity of seeing a similar case. Marie K., of Prenzlau, twenty-three years old (according to statements in a letter from her family physician), in bending suddenly forward struck her face against an upright, sharp-edged stick, the kitchen where she was occupied being somewhat dark.

The immediate consequence was a free bleeding from a severely painful wound in neighborhood of the right lower orbital edge. The eye itself was not injured, but instantly blinded, so that light and darkness were not once distinguishable. It was also learned from the physician's letter that there had been no intra-ocular hemorrhage.

The wound healed rapidly, vision improved slowly, and on January 26, 1878, when I first saw the patient, she had $\frac{5}{60}$ and with $+\frac{1}{10}$ could read 0.75 with difficulty. The field of vision was especially contracted from above. The lower part of the optic nerve, upright image, seemed quite bleached, the central excavation somewhat greater than in the left eye. On February 19, 1878, V had still somewhat improved to $\frac{5}{36}$.

Case 3.—A third case befell a colleague who, in leaping his horse, suffered a contusion of the head, followed immediately, so stated, by complete blindness. Three months later I found in the right eye myopia $\frac{1}{3}$, $V = \frac{6}{24}$ (sight was said to have been perfect previously), the field of vision complete, the optic nerve somewhat pale on the temporal side. Left eye: myopia $\frac{1}{3}$, $V = \frac{6}{9 \text{ to } 6}$. In both eyes only slight posterior staphyloma.

That there was no injury to the optic nerve in the first two cases is obvious.

In the third case a fracture of the bone of the skull in the neighborhood of the optic foramen might be thought of, although the patient, who is at the same time a competent judge, denied the possibility of such a thing. So there remains only the contusion of the cranial bones to account for the blindness. At all events the etiological connection between the injury and the transient blindness is undoubted, and the causation of the blindness can only be looked for in the optic nerve. But it is only at one place that the latter could be reached or affected by the jarring of the cranial bones—that is, in the optic foramen. In the orbital tissues the optic nerve is too softly embedded to be accessible to indirect contusion, and farther back on the base of the skull the chiasma would have been implicated, causing interference with sight in both eyes.

In regard to the changes which took place in the optic nerve as immediate results of the commotion, only theories can be adduced; the most probable is naturally the presumption of a hemorrhage.

At all events the results of the commotion in the optic nerve were sufficiently important to effect an immediate interruption to conduction; on the other hand, transient enough to admit of the restoration of a slightly impaired power of vision; and finally, of so material a nature as to leave a permanent paleness.

II.—*A rare conjunctival lesion.* (*Formation of vesicles with subsequent atrophy.*)

The patient, a vigorous man of seventy, who up to that time

had never suffered with his eyes, was affected in the summer of 1882 with an inflammation in both.

When I saw him in November I found the scleral conjunctiva strongly and irregularly congested, penetrated by large blood-vessels, the conjunctiva of the lower lid shrunken and adherent to the ocular conjunctiva. On the upper lid every thing was normal.

The previous short duration of the disease, the normal condition of the upper lid, and the irregularity of the shrinkage on the lower, which only at isolated circumscribed spots had caused attachment of the border of the lid to the scleral conjunctiva, were all opposed to a trachomatous atrophy. The painfulness was unimportant while the persistent, striking redness of the eyes was disagreeable to the patient.

In February, 1883, I was called suddenly on account of an important aggravation of symptoms which had set in during the night. When I arrived the patient was at breakfast reading his paper and knew nothing about it, but the attendants had noticed that something had happened in the right eye. There appeared, in fact, on the scleral conjunctiva, close to the edge of the lower lid, a deeply congested place and a light gray movable mass, evidently a part of the wall of a vesicle which was hidden in great part behind the under lid and had already burst, just as I had seen it in cases of pemphigus conjunctivæ in association with the same disease in the skin. The pemphigus vesicles had never been present in the skin, but on the other hand the patient had suffered for years with a similar disease of the mucous membrane of the mouth, on which circumscribed patches of inflammation appeared from time to time.

At the spot where the formation of the vesicle had taken place a new attachment of the edge of the lid to the ball gradually developed.

This large inflammatory vesicle had naturally not the slightest resemblance in its formation to the small translucent vesicles which are occasionally seen on the scleral conjunctiva.

Throughout, nothing of a therapeutic nature was employed; the patient had on this account the very natural desire to have the advice of others, and went to Prof. Graefe in Halle. Prof. Graefe stated to me that he regarded the case as belonging to a group which he had reported as cases of "Essential Atrophy of the Conjunctiva."

In the foregoing case, according to my view, the atrophic

process was set up as the result of the vesicle formation observed in the conjunctiva; and I am under the impression that such may have been the condition also in other cases, as it was only by accident that I had the opportunity of seeing the remains of a vesicle which in any case remains only a very short time, makes very little pain, and therefore is hardly noticed by the patient.

SYSTEMATIC REPORT ON THE PROGRESS OF OPHTHALMOLOGY DURING THE FIRST QUARTER OF THE YEAR 1884.

By H. MAGNUS, Breslau; C. HORSTMANN, Berlin; and A. NIEDEN, Bochum.

WITH THE CO-OPERATION OF

C. E. Fitzgerald and Ferguson, Dublin; E. Marckwort and P. von Mittelstädt, Antwerp; Dantone, Rome; Hirschmann, Charkow; S. M. Burnett, Washington; Schjötz and Ole Bull, Christiania, etc.

Translated by Dr. F. E. D'Oench, New York.

I.—GENERAL OPHTHALMOLOGICAL LITERATURE.

By H. MAGNUS, M.D.

a.—TEXT-BOOKS, MONOGRAPHS, TREATISES ON GENERAL, BIBLIOGRAPHICAL, AND HISTORICAL SUBJECTS.

1. Armaignac. Projet de création d'un musée ophthalmol. *Rev. clin. d'ocul.*, 1884, No. 3.

2. Berger and Auracher. Practica Oculorum of Benvenutus Grapheus. Contribution to the history of ophthalmology. Munich, 1884.

3. Bravais. Simulation of one-sided amaurosis. *Soc. franç. d'ophth.*, Jan. 31, 1884. *Centralbl. f. pract. Augenheilk.*, 1884, p. 113.

4. Schäfer. The eyes of the pupils of the deaf and dumb asylum at Gerlachsheim. *Centralbl. f. pract. Augenheilk.*, March, 1884.

5. Tepljaschin. Ophthalmological observations. *Medizynski Wjestnik*, No. 8–11.

6. Uhthoff. Ophthalmoscopic examinations in nervous diseases. *Report on the XV. meeting of the Ophthalmological Society*, Heidelberg, 1883. Rostock. 1883, p. 139.

Armaignac (1) favors the proposition of Louis Roy, to erect an ophthalmological museum, which shall contain prepared specimens, with descriptions furnished by the donors, in its physiological, pathological, anatomical, comparative anatomical, and teratological departments. Armaignac would like to combine with it an ophthalmological library and collection of instruments, made as complete as possible and obtained by donations, and would like to see it undertaken by the French Ophthalmological Society. V. Mittelstädt.

Berger and Auracher (2) have edited the rare Practica Oculorum of Benvenutus Grapheus, who lived before the fifteenth century. The chapter of cataracts is treated at greater length. He includes under them opacities of the lens, amblyopia, and amaurosis, and accordingly distinguishes between curable and incurable cataracts. The operation is always preceded by a course of preparatory treatment. Reclination is discussed at length, as well as the bandaging and after-treatment. The therapeutical part is very voluminous and contains an immense number of prescriptions, salves, etc.

Bravais (3) puts a red glass before the one eye and a blue glass before the other, and tells the individual to read type, half of which is blue and half red. If he is a malingerer, he will read fluently, as he can recognize the red letters through the blue glass, and the blue letters through both. But if he is blind in one eye, for instance on the one covered with the blue glass, he will be unable to read the blue type through the red glass with the seeing eye. But if the blue glass be then brought before the good eye, he will be able to read all.

Schäfer (4) found marked preponderance of emmetropia and hypermetropia. The anomalies of refraction were only of a low degree. Neither the number of myopes nor the degree of myopia increased with advancing age. Simple astigmatism occurred in five pupils among the ninety-five—hypermetropic in four, and myopic in one. V was normal in eighty cases. Accommodation was normal in ninety-four cases, the action of the other muscles also. In 5 % there was retinitis pigmentosa.

TEPLJASCHIN (5) treated 2,130 eye-patients from 1879 to 1881 in Uni, district of Glasow, department of Wjatka; they constituted 13.3 % of all patients. Anomalies of refraction and accommodation were rarely observed. Trachoma, with its results, was of very frequent occurrence, especially among the Wotjaks (according to the author 25 % of the whole Wotjak population suffers from trachoma). The cornea was affected in 52.8 %, the conjunctiva in 35.7 %, the lids in 18.9 %; cataract occurred in almost 3 % of all cases, glaucoma in 2 %. HIRSCHMANN.

UHTHOFF (6) examined 542 cases of mental affections; 170 were cases of psychosis, 150 of progressive paralysis of the insane, 135 of alcoholism and the mental disturbances depending upon it, fifty-six of epilepsy, and thirty-one of actual localized affections of the brain and spinal cord. The result was as follows:

Among the thirty-one cases of localized affections the ophthalmoscope revealed changes in the fundus in twenty cases, 64 %:

(*a*) Abnormal haziness of the retina or papilla, or slight neuritis, in eight cases, 22¼ %.

(*b*) Choked disc in three cases, 9⅜ %.

(*c*) Abnormal paleness or atrophy of the papilla in three cases, 9⅜ %.

(*d*) Marked hyperæmia of the papilla in one case, 3⅛ %.

(*e*) Retinal hemorrhages in two cases, 6⅜ %.

(*f*) Hemianopsia in two cases, 6⅜ %.

(*g*) Conjugate deviation in one case, 3⅛ %.

Among the 150 cases of progressive paralysis of the insane there were ophthalmoscopic changes in seventy-five, *i. e.* 50 %. There is generally an even, more or less intense haziness of the retina, which also affects the papilla and extends far into the retina; these changes were observed in thirty-two cases, or 28 %. Sometimes, in about 8 %, there is also marked hyperæmia of the papilla. Uhthoff seeks the cause of the haziness in the layer of nerve fibres, and proposes the name of retinitis nubescens or smoky retinitis for it; Klein called it paralytic retinitis.

Atrophy of the optic nerve comes next in frequency in progressive paralysis, namely, in thirteen cases, 8⅔ %; counting doubtful cases, in which there was discoloration of the papilla, but atrophy was uncertain, the percentage rises to 14.

Slight forms of genuine neuritis optica were but rarely observed. Choked disc did not occur at all. Marked hyperæmia of the optic disc without any opacity was found in only three cases among the 150 of progressive paralysis; retinal hemorrhage only once.

Ophthalmoscopic changes were found in fifty-five cases among the 135 of alcoholism, *i. e.* in 41 %. The most frequent is a uniform gray opacity of the retina and disc, which does not produce any marked visual disturbances. Next in frequency comes partial atrophic discoloration of the disc, which is confined to the temporal half and occurs in about 15 %. Uhthoff thinks this condition may be of service in assisting to make the diagnosis of alcoholism. In five cases there was hyperæmia of the papilla, and in two neuritic changes were observed in the disc.

Ophthalmoscopic changes were observed in seven cases, 12 ½ %, among the fifty-six of epilepsy :

Slight neuritis optica in two cases, 3½ %.

Abnormal pallor of the papilla in two cases, 3½ %.

Hyperæmia of the papilla in one case, 2 %.

Slight haziness of the retina and papilla in two cases, 3½ %.

Ophthalmoscopic changes were observed in seventeen cases, 10 %, among the 170 of psychosis :

Slight diffuse haziness of the retina and papilla in eleven cases, 6½ %.

Abnormal pallor of the discs in three cases, 1½ %.

Hyperæmia of the discs in two cases, 1 1/10 %.

Retinal hemorrhages in one case, ½ %.

b—STATISTICAL PAPERS.

7. BÄUERLEIN. Würzburg Ophthalmic Clinic. Report, for fifteen years (1869–1883), with a paper on 400 cataract-operations. Würzburg, 1884.

8. BERGMEISTER. Report of the School for the Blind at Purkersdorf, Lower Austria. Second report ; the school was formerly at Ober-Döbling. Vienna, 1884.

9. MANCHESTER ROYAL EYE HOSPITAL. Sixty-eighth Annual Report, 1883. Manchester, 1884.

10. MASSACHUSETTS. Fifty-eighth Annual Report of the Massachusetts Charitable Eye and Ear Infirmary, for the year 1883. Boston, 1884.

11. VAN MILLINGEN. Report of the Private Ophthalmic Institute at Constantinople, for the year 1882. Salzburg, 1883.

12. NEW YORK. Fourteenth Annual Report of the New York Ophthalmic and Aural Institute, for the year 1883.

13. SCHREIBER. Annual Report of the Magdeburg Ophthal-

mic Institute, from Oct. 1, 1882, to Dec. 31, 1883. Magdeburg, 1884.

BÄUERLEIN (7) has treated 20,518 patients, and performed 1,308 operations; among these, 423 extractions according to v. Graefe. In 90.5 % the course of the operation was perfectly regular; in 9.5 % unpleasant accidents occurred, namely in twenty-five cases, prolapse of vitreous—in eight before, and seventeen after, the expulsion of the lens, profuse hemorrhage in eleven cases, and in two the corneal section was too small. The course of healing was normal in 76.5 %, in 24.5 % not normal—being complicated, in forty-five cases, with iritis; in six, with iritis resulting in closure of the pupil; in three, with iridochoroiditis; in two, with purulent iritis; in ten, with secondary hemorrhage; in five, with infiltration of the edge of the wound; in two, with panophthalmitis; in twenty-one, with impaction of iris in the wound. All in all, eighteen eyes were lost. The results of the antiseptic operations were poorer than of the operations without antiseptics.

Bäuerlein has also endeavored to arrange and utilize his cases, both in regard to the etiology of eye diseases and the statistics of blindness.

In MANCHESTER (9) 16,502 patients were treated, and 1,365 operations performed—165 extractions according to v. Graefe; good results in 137 cases, moderate results in eleven; operation successful in four cases, but V poor, on account of other previous diseases; thirteen operated eyes were lost—eight through suppuration of the cornea, five through suppuration of the iris. Ophthalmia neonatorum was observed in 358 cases; in forty only one, and in eighteen both corneæ were affected.

In BOSTON (10) 7,468 new patients were treated—seventy extractions according to v. Graefe, six of them losses, in two only quantitative perception of light. Of twenty-four cases treated with jequirity, fourteen were improved, six remained as before, four were partially improved. Of the twenty-four treated with jequirity, twenty-two had pannus; in four the pannus had increased in spite of the treatment; in eight it had completely disappeared; in seven, almost; in two, no change; in one it became less dense

MILLINGEN (11) instils a four-per-cent. solution of boracic acid into the conjunctival sac before the extraction; the face, lens, and lashes are first cleansed with soap and water, and then with

carbolic acid. Every patient is given a Turkish bath a day before the operation. The instruments are disinfected with boiling water. Bandage of carbolized cotton. Of fifteen extractions of senile cataract, not one was lost. Corneal ulcers are treated with the ferrum candens (every other day) and iodoform.

SCHREIBER(13) treated 1,364 patients, and performed 122 operations. The lachrymal sac was extirpated in five cases; in four of them on account of ectasia of the sac and blennorrhœa of long standing, and once on account of phlegmone of the lachrymal region with fistula. Schreiber praises the results of extirpation highly.

In the dispensary of the NEW YORK OPHTHALMIC AND AURAL INSTITUTE (12), 5,638 new eye-patients; in the hospital, 340. Operations, 524; extractions of cataract, sixty-three (one failure); division, fourteen cases; divisions of secondary cataract, fifty-one (no failure). Iridectomies, seventy-seven; enucleations, sixty; squint operations, 111. The Institution is raising a permanent fund, with a view to make it independent of the financial aid of its founder and present surgeon-in-charge—Dr. H. Knapp.

BURNETT.

II.—GENERAL PATHOLOGY, DIAGNOSIS, AND THERAPEUTICS.

By H. MAGNUS, M.D.

a.—GENERAL PATHOLOGY AND DIAGNOSIS.

14. BECHTEREW. On the phenomena observed after dividing the fibres of the optic nerve within the cerebral lobes in the neighborhood of the posterior portion of the inner capsule. *Neurol. Centralbl.*, 1884, No. 1.

15. FÖRSTER. The diagrams for entering the extent of the field of vision. *Report on the Fifteenth Meeting of the Ophthalmological Society*, Heidelberg, 1883. Rostock, 1883.

16. ORTMANN. Experimental investigations on central keratitis. *Inaug. Diss.*, Königsberg, 1884.

BECHTEREW (14) produced, by his divisions, homonymous hemianopsia on the side opposite the injured hemisphere. The boundary between the defect in the visual field and the intact portion is a line passing close to the point of fixation. The pupils were not affected. Bechterew concludes from his experiments

that the fibres of the optic nerve, after reaching the corpora quadrigemina on one side, pass on through the posterior portion of the inner capsule of the hemisphere of the same side without crossing again.

FÖRSTER (15) would like to have a uniform chart for entering the extent of the visual field adopted. The point of fixation should lie at the point of intersection of the meridians. The parallels should be equidistant, but their distance apart should not be measured by the difference between the length of the sines. Some agreement should also be come to in regard to the numbering of the meridians, and the boundaries of the normal field of vision. Förster makes some propositions with this object in view.

ORTMANN (16) has found that the difference in reaction of the corneal tissue after impregnation with bacteria depends upon the conjunctival secretion. This alone, not the fixed cells, takes part in producing the infiltration surrounding the punctures. Infection of a corneal wound is generally followed by an inflammatory process in form of an infiltration, a genuine pus nodule, which afterward breaks down, beginning at the centre, and forms an ulcer. Heterogeneous elements, coming from the conjunctiva, and not proliferating cells of the corneal tissue, take an active part in this process ; they are white blood corpuscles, which have passed through the blood-vessels of the conjunctiva, especially at the limbus.

b.—THERAPEUTICS.

17. CARTER, BRUDENELL. Modern operations for cataract. Lect. I., II., III. *Med. Times and Gazette*, 1750, 1752, 1754.

18. DUBOIS. The effect of a prolonged chloroform narcosis on the eye. *Soc. de Biol.*, Jan. 19. *Le Progrès Méd.*, 1884.

19. GAYET. Iridectomy with an empty anterior chamber. *Soc. franç. d'ophth.*, Jan. 28, 1884. *Centralbl. f. pract. Augenheilk.*, 1884, p. 49.

20. KAZAUROW. The effect of hot full-baths and foot-baths on the circulation of blood in the eye and on the intra-ocular pressure. *Wratsch*, 1884, Nos. 1 and 2.

21. NORTON, G. S. The use of ice in ophthalmic cases. *Amer. Homœo. Ophth. and Otol. Soc.*, 1883.

22. PAMARD. Sur un nouveau procédé d'iridectomie. *Soc. franç. d'ophth.*, Jan. 31, 1884.

23. PFLÜGER. General therapeutics. *Report of the Berne University Ophthalmic Clinic for the Year 1882.* Berne, 1884.

24. SATTLER. Antiseptics in ophthalmology, especially sublimate, and the use of cauterization. *Report on the Fifteenth Meeting of the Ophth. Soc.*, Heidelberg, 1883. Rostock, 1883.

DUBOIS (18) has found that in prolonged chloroform narcosis the ophthalmoscopic image becomes indistinct on account of the development of irregular corneal astigmatism. After the disappearance of the pupillary reflex the refraction is diminished 4–5 D., while T is also reduced.

KAZAUROW (20) observed in thirty cases the effect of hot full-baths (fifteen cases) and hot stimulating foot-baths (fifteen cases) on the normal eye. His results are as follows: Hot full-baths generally produce pallor of the papilla in the normal eye on account of the diminution in the contents of the capillaries, a diminution in the contents of the arteries (sometimes perhaps also a slight dilatation of the veins), and marked diminution of the intra-ocular pressure owing to diminished intervascular pressure in the eye. The cause of these phenomena is found in the weakening of the heart's action and the diminished blood-pressure. When the latter does not occur, there are no changes in the eye. The author therefore thinks that hot full-baths will hardly find a place in ophthalmological therapeutics for the purpose of derivation. Hot foot-baths also have no derivative action; on the contrary, the author found the papilla redder, the retinal blood-vessels dilated, the intra-ocular pressure increased, while at the same time the intravascular pressure was increased and the pulse quickened. All these phenomena were the more marked the longer the bath lasted. The author therefore considers foot-baths contra-indicated in arterial hyperæmia of the fundus, but useful in venous hyperæmia. HIRSCHMANN.

NORTON (21) considers that the chief sphere of action of ice is to prevent or abort the various forms of inflammation of the eye, but for this purpose its use should be constant and not intermittent. BURNETT.

PFLÜGER (23) is in favor of antiseptics without reserve. For corneal ulcers he recommends iodoform. Diseases of the lachrymal sac are treated by making the tear-ducts permeable, and then injecting a mixture of boracic and carbolic acids; operations on the globe could then be safely performed. In 1883 sublimate in solutions of 1:10,000 was substituted for carbolic acid. Pflüger enters into very severe polemics against Steffan in regard to the use of antiseptics in cataract-extractions, with special reference

to the article of Steffan in the *Arch. f. Ophth.*, vol. xxix., 2, p. 191.

SATTLER (24) finds that chlorine water far surpasses all the other antiseptics thus far used in ophthalmology. Sublimate in solutions of 1:5,000 ranks equally high. Resorcin and hydrochinon can also be recommended; in some cases also the hydrogen binoxide. A very important paper for the knowledge of the use of antiseptics in ophthalmology.

III.—INSTRUMENTS AND REMEDIES.

25. ALBERTOTTI. Nota sopra alcuni strumenti di chirurgia oculare. *Italia medica*, No. 36.

26. DUJARDIN. Les accumulateurs d'électricité et la galvano-caustique oculaire. *Journ. des sci. méd. de Lille*, 1883, p. 930.

27. FRÖHLICH. Galvano-cautery. *Klin. Monatsbl. f. Augenheilk.*, Jan., 1884.

28. HARLAN. Fixation in testing the field of vision in central scotoma. *The Polyclinic*, Jan., 1884.

29. MCFARLAND, S. F. A personal experience with prismatic glasses. *Trans. Amer. Ophth. Soc.*, 1883.

ALBERTOTTI (25) describes a new forceps for the extraction of cysticerci, a modification of Desmarres' fenestrated pincette and Graefe's cataract-knife. DANTONE.

DUJARDIN (26) recommends the accumulator for galvano-cautery in ophthalmic surgery. MARCKWORT.

In cases of central scotoma it is very difficult to keep the point of fixation always the same. To overcome this, HARLAN (28) uses, instead of a dot or cross, a circle which is just large enough to lie outside the scotoma. The patient is then told to hold the eye so that the circle, as a whole, shall always be in view.

BURNETT.

MCFARLAND (29) has been using two prisms of 7° each bases in for seventeen and a half years, and is better satisfied with them than without them, as he is able to obtain and retain for a while binocular vision. Under the use of the prisms the interni seem to have become stronger. BURNETT.

30. AYRES. The use of atropine in determining glasses, and the influence of the vaso-motor system on the accommodation of the eye. *New Orleans Med. and Surg. Journ.*, vol. xi., No. 8.

31. V. HIPPEL. Therapeutical value of iodoform in diseases

of the eye. Med. Gesellsch. in Giessen. *Berl. klin. Wochenschr.*, No. 8.

32. PRINCE. Peroxide of hydrogen in suppurative conjunctivitis and mastoid abscess, with a report of two cases. *St. Louis Med. and Surg. Journ.*, March, 1884.

33. RAMPOLDI. Ancora delle injezioni ipodermiche di calomelano alle tempia nella terapia oculare. *Ann. di ottalm.*, vol. xiii., No. 1.

34. THEOBALD. Vaseline-cerate, a convenient basis for ointments intended for application to the eyelids. *Trans. Amer. Ophth. Soc.*, 1883. The cerate is made of one part of yellow wax to three or four of vaseline.

RAMPOLDI (33) still recommends subcutaneous injections of calomel at the temple, not only in inflammations of a syphilitic nature, hut also in phlogistic-exudative processes. That they are effective, he concludes from the fact that frequently the pupil dilated at once on the instillation of atropine after calomel had been injected, while previously mydriatics had produced no effect. DANTONE.

IV.—ANATOMY.

35. PFLÜGER. Congenital anomalies. *Ophthalmic Clinic of Berne University—Report for the year 1882.* Berne, 1884.

PFLÜGER (35) found the following congenital anomalies in one family, consisting of a mother and four children. In the mother and three children, total bilateral irideremia. In the mother and two children, opacities of the cornea. Opacities of the lens in all members of the family. In two children, persistent hyaloid artery. Nystagmus in the mother and three children. Ptosis in the mother and one child. In the oldest child, phthisis of the right and microphthalmus of the left eye. Former generations of the family had been healthy. The father is no relative of the mother, and has good eyes.

36. VAN DUYSE. Du colobome centrale ou maculaire. *Ann. d'ocul.*, Jan.–Feb., 1884.

VAN DUYSE (36) describes a case of coloboma of the macula lutea. The papilla was surrounded by a broad scleral ring, while bundles of opaque nerve fibres emerged from the lateral half of the optic nerve. In the region of the macula lutea there was a coloboma of the choroid of triangular shape; the horizontal

diameter equalled 3 P. D., the vertical 1¾ P. D.; the retinal blood-vessels passed over the coloboma. While the eye was otherwise emmetropic, there was myopia in the region of the coloboma, which at its centre reached 4 D.; perception of light existed only over the inner half of the retina. Van Duyse discusses at length similar previous observations and the various theories designed to explain the development of a central coloboma; he thinks it is very difficult to reconcile the facts with a fœtal rotation of the globe. He considers that the best hypothesis which, without assuming a rotation of the globe, places the papilla and macula lutea into the fœtal eye-fissure, and thus explains the development of a central coloboma. MARCKWORT.

37. BUNGE. The field of vision and course of the fibres in the optical conducting apparatus. Halle, 1884.

38. VAN DUYSE. Contribution à l'étude des anomalies congénitales du nerf optique. *Ann. d'ocul.*, Mar.–Apr., 1884.

39. MAGNUS. Report of cases of congenital malformations of the optic nerve. *Klin. Monatsbl. f. Augenhk.*, Mar., 1884.

40. MAYER and PRIBRAM. Studies on the pupil. *Zeitschr. f. Heilk.*, vol. v., 1.

BUNGE (37) has made some excellent investigations on the region between the papilla and macula, and the nerve fibres supplying it. They are valuable for pathology, as well as for anatomy and physiology. A series of very characteristic illustrations shows the position of these fibres in the optic nerve, the chiasma, and optic tractus. The plates, however, are only explained in the text, which makes a rapid survey of them difficult.

VAN DUYSE (38) reports another case of coloboma of the optic-nerve sheath, and three cases of congenital conus, downward, of the optic nerve (*cf.* Fuchs, *Graefe's Arch. f. Ophth.*, vol. xxviii., 1, p. 139). MARCKWORT.

MAYER and PRIBRAM (40) found a centre of dilatation of the pupil in the spinal cord. The fibres for dilating the pupil, which pass through the cervical part of the sympathetic nerve, take their origin in this spinal centre.

41. MOTAIS. Anatomie et physiologie comparée de l'appareil moteur de l'œil. *Soc. franç. d'ophth.*, Jan. 31, 1884. *Centralbl. f. pract. Augenheilk.*, 1884, p. 113.

MOTAIS (41) found that Tenon's capsule consists of two leaves, an ocular and a muscular leaf; the latter extends to the margin of

the cornea, and detaches itself at the height of the equator of the eye in the shape of a circular diaphragm, and then inserts itself at the walls of the orbit. The muscular leaf encloses the muscles like a sheath, after their passage through the diaphragm. Fibres pass from the sheaths of the muscles to the diaphragm and the lateral edge of the orbit.

V.—PHYSIOLOGY.

42. BERLIN. The power of judging depth and distance in animals, and demonstration of an apparatus. *Rep. on the XV. Meeting of the Ophth. Soc.*, Heidelberg, 1883. Rostock, 1883.

43. NICATI. De l'acuité visuelle binoculaire. *Soc. franç. d'ophth.*, Jan. 29, 1884.

44. WADSWORTH. On the apparent curvature of surface, produced by prisms. *Trans. Amer. Ophth. Soc.*, 1883.

BERLIN (42) remarks that the horse can judge of distances much better than man, but only by means of binocular fixation. The power of perceiving the third dimension seems to be much more developed in animals than in man.

NICATI (43) believes that by producing perfect binocular fixation he can bring about an increase in the power of vision equal to that produced by doubling the intensity of illumination. He assumes that the perceptions of light of homologous points of the retina are united in a common centre and added to each other.

This familiar phenomenon is explained by WADSWORTH (44) by the action of the prisms (when their bases are turned in) in bringing the rays from the peripheral parts of a plane to fall on the retina more and more closely to those coming from the centre of the plane; in other words, the retinal image is shorter in its horizontal direction than it is in the unarmed eye, and has the same form as it would have, had the image come from a curved surface. In the Reviewer's opinion, Wadsworth has not taken sufficiently into consideration the part played by the extrinsic muscles and the law of projection in the phenomenon.

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45. LANDESBERG. Does the mechanical irritation of the optic nerve produce the sensation of light? *Klin. Monatsbl. f. Augenhk.*, Jan., 1884.

46. STARR. The visual area of the brain. *Amer. Jour. Med. Sci.*, Jan., 1884.

STARR (46) gives no original cases or experiments, but from the mass of facts contributed by others, he concludes that the function of sight has its seat in the occipital lobes, and that the right lobe receives impressions from the right half of both eyes, and the left lobe those from the left half of both eyes.

BURNETT.

47. LAQUEUR. Ophthalmometric investigations on the curvature of the cornea under normal and pathological conditions. *Bericht über d. XV. Versamml. d. Ophth. Ges.*, Heidelberg, 1883. Rostock, 1883.

LAQUEUR (47) always found the curvature of the cornea diminished in the horizontal meridian in the periphery, and more at the inner than at the outer end on account of the position of the $\angle a$; in the vertical meridian, on the contrary, the diminution of curvature is less marked either above or below, while in some cases there was no decrease whatever in the upper portion, and the periphery of the cornea had the same curvature as at the line of vision. In other cases the lower half of the vertical meridian showed the least diminution in curvature, while in the upper half it was like that of the horizontal meridian. Traction of the upper lid produces regular astigmatism, consisting in a diminution of curvature of the horizontal, and a corresponding increase of that of the vertical, meridian. The measurements have shown that the astigmatism of the lens is of very little consequence; in one third of all cases there was none whatever, the astigmatism of the cornea being equal to the total astigmatism; in about another third the astigmatism of the lens and cornea were homonymous; in the last third it was the reverse of the corneal astigmatism and neutralized it either entirely or partially. In five cases of keratoconus a high degree of regular astigmatism was found, the correction of which materially improved vision. In extreme degrees of ametropia no unusual value of the radius of curvature was found. Glaucoma does not seem to have any material influence on the curvature of the cornea, and the presupposed diminution apparently does not exist. Linear extraction, according to Graefe, always leaves a certain degree of astigmatism, generally reducing the curvature of the vertical meridian, and in young people especially to a considerable extent. The operation for strabismus and pterygium does not affect the curvature of the cornea.

48. GRABER. Outlines for investigating the perception of light and color in animals. Prague and Leipzig, 1884. 322 pp., 8vo, price 7.50 Mk.

49. HILBERT. The association of sensations of taste and smell with colors and of sounds with form-conceptions. *Klin. Monatsbl. f. Augenhk.*, Jan., 1884.

50. HILBERT. Contributions to the knowledge of color-blindness. *Arch. f. d. ges. Phys.*, vol xxxix., 5 and 6.

In the present volume GRABER (48) has embraced all his experiments on different animals. They were made with great faithfulness, but their conclusiveness does not seem entirely beyond doubt. It will always be difficult to draw conclusions as to the existence and nature of the sense of light and color in animals, from the mere fact that the animal experimented upon preferred one shade of color or one intensity of light to another. The following are some of the facts found by him. 1. There is no uniformity whatever among animals in regard to their preference for colors. Thus he disposes of the strange assertion of Grant Allen, that man and animals have the same color-sense. The erroneousness of this assertion had been pointed out by the Reviewer a few years ago, in an exhaustive paper. 2. In some animals the constancy of their reaction to color is very remarkable; in others there is none whatever. 3. The effect of two lights of different color is in general the greater, the farther apart they are in the spectrum. This seems to indicate that in choosing between two lights of different color, the animal is influenced by other factors besides the quality of the light. 4. Most animals possess a greater or less degree of sensibility for the ultra-violet rays. 5. Animals that prefer white also prefer blue, while those preferring dark colors seem to favor red. The bibliography is very defective, many of the latest and most important researches having been overlooked.

HILBERT (49) observed that in a lady unpleasant sensations of taste or smell produced conceptions of color; weak ones giving rise to bright shades of color, strong ones to dark shades.

The red-green blind can be arranged according to HILBERT (50) in three groups: one has a markedly shortened spectrum (red-blind of Holmgren), the second a slightly shortened spectrum (green-blind of Holmgren), and the third, lying between the two, has a spectrum of medium extent. The color-blind are very sensitive to differences in intensity of illumination; the explanation is that the brightness of colorless objects can be judged of more readily than that of colored objects.

VI.—ANOMALIES OF REFRACTION AND ACCOMMODATION.

By Dr. HORSTMANN.

51. Landolt. L'état actuel de la question de la myopie. *Arch. d'ophth.*, 1884, vol. iv., 1, p. 1.

52. Vision of Pupils in the Public Schools of Springfield, Mass. *Report of School Committee of the City of Springfield, for 1884.*

53. Derby, H. Influence on the refraction of four years of college life. *Trans. Amer. Ophth. Soc.*, 1883.

54. Layet. Hygiène de la vue dans l'écriture. *Gaz. hebd. des sci. méd. de Bordeaux*, 1884, No. 43.

55. Landesberg, M. Some new facts about astigmatism. *N. Y. Med. Jour.*, Jan. 5, 1884.

56. Leroy, C. J. A. De la kératoscopie ou de la forme de la surface cornéenne déduite des images apparentes refléchies par elle. *Arch. d'ophth.*, 1884, vol. iv., 2, p. 140.

Landolt (51) treats the question of progressive myopia in a very lucid and comprehensive manner. While fully considering the literature of the subject, Landolt criticises the various theories in regard to the cause of myopia and the development of posterior staphyloma. He finds that our knowledge of the subject has not been materially advanced since the appearance of Donders' classical work in 1864. All explanations thus far attempted contain something of truth. It is probably impossible to give one and the same explanation for all cases of progressive myopia; its causes are too various, and act both singly and combined, and unite in producing effects of which we scarcely can form a conception. If statistics shall be of greater value than heretofore, it is necessary to examine vision and the fundus, besides determining refraction both subjectively and objectively, and also take into consideration the general health, conformation of the skull, heredity, and occupation of the individual both in and out of school; the investigations however should not be confined to the school. Landolt thinks that predisposition is very probable. V. Mittelstädt.

The examinations of the pupils of the Springfield (52) schools were made by Dr. W. W. Gardner, and we subjoin the statistics of the examinations: number of pupils examined, 1,082; perfect vision, 886; defective vision, 196; errors of refraction, 372; manifest H, 291; M, true or spasmodic, 81; Ast., 69; color-blindness,

7; range of H, 0.5–4.5 D.; range of M, 0.5–18 D.; percentage of M in lower grades, 4; same in higher grades, 10; same in grammar-schools, 6; same in high-schools, 14; same in sophomores in high-schools, 21. BURNETT.

DERBY (53) examined 254 of the graduating classes at Amherst College, having previously examined the condition of their refraction at entrance. A comparison of the results of each examination gives the following percentage: H at entrance, 15.4; at graduation, 18.5; M at entrance, 35.4; at graduation, 47.2; E at entrance, 49.2; at graduation, 34.3. Average H at entrance, 0.7 D.; at graduation, the same. Average M at entrance, 1.8 D.; at graduation, 2.4 D. Of E there were at entrance 125 cases; of these 86 remained so, 10 became hyperopic, and 29 myopic. BURNETT.

In this communication LANDESBERG (55) maintains his former thesis in regard to the transitory character of certain instances of regular astigmatism. He has recorded thirteen more cases in addition to the fourteen reported in *Graefe's Arch.*, vol. xxvii., 2. The conditions under which regular astigmatism may develop are: progressive M, with and without spasm of accommodation, and spasm of A in any form of eye. The full histories of three cases are given. BURNETT.

57. EALES. Paralysis of convergence and accommodation. *The Lancet*, 1884, No. 3.

58. SCHMIDT-RIMPLER, H. Paralysis of accommodation after diphtheria of the pharynx. *Berl. klin. Wochenschr.*, 1884, No. 7.

EALES (57) observed paralysis of convergence and accommodation in a girl æt. thirteen. There was no associated contraction of the pupils, though they reacted promptly on light. The child was otherwise perfectly well.

Jacobson found that while the paralysis of accommodation lasts the far-point is moved farther off; that the true refraction of the eye is therefore higher than during the paralysis. SCHMIDT-RIMPLER (58) believes that this condition can only be explained, in accordance with the investigations of Weiss, by assuming that the atropinization afterward was insufficient to overcome the renewed accommodative effort.

VII.—LIDS AND SURROUNDINGS.

59. DORNIG. Case of gummous affection of the lids. *Vierteljahrsschr. f. Dermatologie u. Syphilis*, vol. x., 3 and 4.

60. ADAMS, J. Chancre on the mucous membrane of the

upper lid with marked adenopathy of three weeks' duration. *Trans. Ophth. Soc. Unit. Kingd.*, vol. iii., p. 4.

61. WILLIAMS. Specific ulcer of the edges of the eyelid. *St. Louis Med. and Surg. Journ.*, xlvi., p. 349.

62. DOHNBERG. The operative treatment of inward version of the eyelashes and lids. *Wjestnik Ophth.*, 1884, No. 1, p. 1.

63. STREATFEILD. Transplantation for eversion of lower lid. *The Lancet*, 1884, No. 12.

64. PARANT, LÉON. Traitement du trichiasis et de l'entropion par la tarsoplastie. *Thèse de Lyon*, 1883.

65. DOR, H. D'un nouveau procédé pour opérer le trichiasis et l'entropion. *Lyon méd.*, Oct. 3, 1883.

66. GRUENING, E. Case of blepharoplasty according to Wolfe. *Trans. Amer. Ophth. Soc.*, 1883.

DOHNBERG (62) concludes, from a close scrutiny of the customary methods of operating for trichiasis and entropium, that that of Hotz is the most rational, but insufficient for all severer cases. It has, however, the advantage that it can easily be combined with other methods. In most cases the author adopts a combination of Hotz's operation with that of Snellen, sometimes with that of Jaesche-Arlt. The latter combination he only uses in cases in which there is less of entropium and curvature of the tarsus and more of trichiasis. It generally produces a perceptible disfigurement of the lid, which in the first combination is not the case. The author operates as follows: After performing canthoplasty, a Knapp lid-clamp, as modified and enlarged by the author, is inserted. After incising the skin to the tarsus in the whole extent of the clamp (6–7 *mm.* from the edge of the lid and parallel to it), a narrow strip of skin and muscle (2–4 *mm.* wide) is abscised from the upper edge of the wound, so that the tarsus and fascia tarso-orbitalis are exposed; then a wedge-shaped piece of tarsus is excised according to Snellen. Three sutures are then inserted (but not yet tied) through the lower edge of the wound, then through the upper edge of the tarsal wound and the fascia, and finally through the upper edge of the wound in the skin, so that the lower edge can unite with the tarsus or fascia. The lid-clamp is now removed, the bleeding stilled, the length of the wound increased with scissors at its medial end almost to the nose, at its lateral end beyond the outer commissure; oval or triangular pieces of skin excised at both ends, the muscle removed

to the aponeurosis from the spots thus exposed, and sutures applied (through the lower edge of the wound, the aponeurosis, and the upper edge); all sutures tied, and a sublimate bandage ($\frac{1}{10}$ %) applied. The sutures are removed about four to five days afterward. Relapses are very rare. HIRSCHMANN.

STREATFEILD (63) operated a case of ectropion, the result of an affection of the bone due to lues, by transplanting a flap without a pedicle from the forearm. The upper half took hold, so that there was a marked improvement.

PARANT (64) recommends Gayet's as the best method for operating trichiasis and entropium; sixteen reported cases gave good results. v. MITTELSTÄDT.

DOR (65) operates for trichiasis and entropium by making an undermined flap, occupying the edge of the lid and parallel to it, of the same breadth throughout, and containing the misplaced lashes. Just above this a flap of skin and muscle is formed of the same width, its basis upward, and its free lower edge beside the upper edge of the undermined flap. The upper flap is then pushed through under the lower. The skin of the upper flap is then incised parallel to the lower, and the latter fitted into the defect; then sutures. v. MITTELSTÄDT.

GRUENING (66) performed blepharoplasty on a boy, æt. seventeen. The lid (lower) was prepared in the usual way by loosening its attachments, and the edges of the two were united by three interrupted sutures, leaving a raw surface, 40 × 55 *mm.* A flap was then taken from the skin over the biceps of the left arm, measuring 70 × 50 *mm.* The adipose and cellular tissues were removed, while the flap was still attached by a small bridge of skin. The raw surfaces were washed with a saturated solution of boracic acid, and freed perfectly from blood coagula. The flap was trimmed so that it fit the surface accurately, no puckering being allowed. No sutures were used, but it was covered with goldbeater's skin and a compress of borated cotton applied.

BURNETT.

VIII.—LACHRYMAL APPARATUS.

67. GOLDZIEHER. Foerster's streptothrix in the lower lachrymal duct. *Centralbl. f. pract. Augenhk.*, 1884, p. 33.

68. REUSS, A. v. Concretions of fungi in the lachrymal ducts. *Wiener med. Presse*, 1884.

69. CAMUSET. Tumeurs à leptothrix des voies lachrymales. *Journ. de méd. et de chir. pract.*, August, 1883, p. 366.

70. RAMPOLDI. Un caso di lussazione della glandula lagrimale. *Ann. di ottalm.*, vol. xiii., 1, p. 70.

71. MORTON, STANFORD. Congenital unilateral absence of lachrymation. *The Lancet*, 1884, No. 3.

72. AYRES, S. C. Extirpation of the lachrymal sac. *Amer. Journ. of Ophth.*, 1884, vol. i., 1, p. 17.

According to CAMUSET (69) masses of leptothrix develop at the junction of the tear-ducts, and grow towards the lachrymal sac, which they can fill up entirely. v. MITTELSTÄDT.

In a case of cicatricial ectropion of the upper lid observed by RAMPOLDI (70) the two lachrymal glands were dislodged and forced into the outer commissure, making their abscision necessary.

IX.—MUSCLES AND NERVES.

73. MAKLAKOFF. L'ophthalmomyotomie. *Arch. d'ophth.*, 1884, vol. iv., No. 3, p. 239.

74. SCHERK. On strabismus. *Deutsche med. Wochenschr.*, 1884, No. 19.

75. TWEEDY, J. On the operation for the correction of secondary divergent strabismus. *The Lancet*, 1884, No. 12.

76. FERRI. Di un nuovo strumento pro misurare l'insufficienza dei muscoli esteriori dell'occhio. *Giorn. de R. Accad. di Med. di Torino*, Feb., 1884.

77. EVERSBUSCH, O. Case of nystagmus. *Zehender's klin. Monatsbl. f. Augenhk.*, vol. xxii., p. 45.

78. MASINI, G. Contribuzione alla cura dei dolori ciliari con lo strappamento del nervo nasale externo. *Boll.*, vol. vi., No. 9, p. 204.

79. NOTHNAGEL. On paralysis of the oculomotor nerve. *Wiener med. Presse*, 1884, No. 10, p. 306.

80. ORMEROD. Paresis of ocular muscles. *The Lancet*, 1884, No. 12.

81. GOWERS. Spasm of the ocular muscles. *The Lancet*, 1884, No. 12.

In operating for strabismus, MAKLAKOFF (73) used for dividing the tendon a squint-hook, the inner edge of which was sharpened. It somewhat resembles an instrument which Schöler recommended a few years ago for dividing the optic nerve in enucleation.

SCHERK (74) recommends abscision of a piece of the tendon in high degrees of strabismus.

The instrument of FERRI (76) consists of a fixed prism, base upwards. At a distance of 25 *cm.* there is a screen with the point of fixation and a system of parallel lines, whose distance apart equals one degree. If there is insufficiency of the muscles, the eye looking through the prism will see the point of fixation, not exactly below the point seen by the other eye, but in one of the spaces between the lines, thus giving the exact deviation in degrees.

DANTONE.

EVERSBUSCH (77) observed horizontal nystagmus in a man, which ceased in the median line.

NOTHNAGEL (79) discusses several cases of bilateral paralysis of the oculomotor nerve. In one case the cause was polioencephalitis anterior atrophica chronica; in a second, a tumor in the vermis of the cerebellum, which extended into the corpora quadrigemina; and in a third, a dilatation of both posterior cerebral arteries, which had produced atrophy by pressure on both oculomotor nerves.

ORMEROD (80) saw a man who could not look upwards. When he tried to do so, vertical nystagmus resulted. The other movements of the eye were normal. This condition lasted ten months.

GOWERS (81) found that muscles of the eye can participate in chorea. Transitory diplopia from this cause was not uncommon.

X.—ORBIT AND NEIGHBORING CAVITIES.

82. POOLEY. Cellulitis of the orbit. *N. Y. Med. Journ.*, Mar., 1884.

83. GRIFFITH HILL. Case of primary orbital cellulitis; death on seventh day; post-mortem examination. *Ophth. Rev.*, 1884, vol. iii., No. 31, p. 147.

84. PUÉCHAGUT. De la ténonite ou inflammation de la bourse celluleuse rétro-oculaire d'origine rheumatismale. *Thèse de Paris*, 1884.

85. MAGNUS, H. Periodic left-sided exophthalmus on bending the head. *Zeh. klin. Monatsbl. f. Augenhk.*, 1884, vol. xxii., p. 62.

86. BRINCKEN, VON. Retrobulbar cavernoma in a child two and a half years old. *Zeh. klin. Monatsbl. f. Augenhk.*, 1884, vol. xxii., p. 129.

87. LEDIARD. Exostosis of orbit. *Trans. Ophth. Soc. Unit. Kingd.*, 1883, vol. iii., p. 23.

88. LAWSON. Congenital tumor of orbit. *Brit. Med. Journ.*, Oct. 20, 1883, p. 773.

89. CRITCHETT, A., and JULER, H. Sarcoma of orbit in a child. *Trans. Ophth. Soc. Unit. Kingd.*, 1883, vol. iii., p. 8.

90. POLLAK. Melano-sarcoma of orbit. *St. Louis Med. and Surg. Journ.*, vol. xlvi., pp. 153 and 169.

91. DIEU. Kystes hydatiques de l'orbite. *Rec. d'ophth.*, No. 1, p. 6.

92. CAUDRON. Kyste hydatique de l'orbite. *Gaz. des hôp.*, 1884, No. 14.

93. NORTON, G. S. Secondary hemorrhage after enucleation of the eye. *American Homœopath.*, Jan., 1884.

94. JACKSON, H. Fracture of the orbital plane of frontal bone and perforation into lateral ventricle of brain; death; autopsy; remarks. *The Lancet*, 1884, No. 4.

MAGNUS (85) observed, in a healthy boy of thirteen, that as soon as he bent his head forward, exophthalmus of the left globe, combined with dislocation downward and outward, ensued. Varicose veins of the left side of the head were the cause.

BRINCKEN (86) removed from the orbit a retrobulbar angioma 3.5 *cm.* long, 3 *cm.* broad, and 2.5 *cm.* thick. The eye could not be preserved.

LEDIARD (87) reports a case of exostosis of the orbit which was situated half-way between the left upper eyelid and eyebrow. It gradually loosened, spontaneously separated one day, and finally fell out. It weighed 9¼ oz. FITZGERALD.

LAWSON (88) observed a congenital tumor of the orbit which seemed to have originated in the body of the sphenoid bone. It contained numerous cysts, and consisted mainly of hyaline cartilage. FITZGERALD.

DIEU (91) punctured a hydatid cyst of the orbit in a young Arab woman, and put in a drain. The exophthalmus disappeared, but the eye remained blind on account of atrophy of the optic nerve. The author has collected twenty-five similar cases described by others, and draws conclusions as to the anatomical and clinical conditions of these cysts. v. MITTELSTÄDT.

CAUDRON (92) observed exophthalmus of the right eye in a soldier æt. twenty-two, which began fourteen months ago. Six *mm.* from the inner edge of the cornea a tumor springs from the sclera, not movable upon it, its upper margin only distinctly de-

fined and covered by the thickened and very vascular conjunctiva. Ophth.: choked disc. V (r.) = $\frac{1}{4}$. General health good. A large quantity of pus escaped when the tumor was incised. A membrane obstructing the opening was incised, whereupon hydatid liquid flowed out. Drainage, healing with V = $\frac{20}{60}$ after remnants of a cyst had been discharged, showing the structure of hydatid cysts. Caudron thinks that a hydatid cyst in the orbital fat had produced an abscess in the tissue lying in front of it, and had thus masked the true nature of the tumor until the opening of the cyst-wall disclosed it. V. MITTELSTÄDT.

NORTON (93) reports two cases of secondary hemorrhage after enucleation. In one there was evidently a hemorrhagic diathesis, but not in the other. In the first case the bleeding ceased after the application of punk, in the other after the administration of persulphate of iron and injections of ice-water into the orbit.

BURNETT.

95. GROS. Étude sur le goître exophthalmique. *Thèse de Paris*, 1884.

96. ROHM. On the extirpation of goitre in morbus Basedowii.

GROS (95) does not consider goitre an affection of the nerve centres, spinal cord, and medulla. The vasomotor nerves only act as connecting links. V. MITTELSTÄDT.

XI.—CONJUNCTIVA, CORNEA, SCLERA, ANTERIOR CHAMBER.

97. SCHATZ. Blennorrhœa neonatorum in the Grand Duchy of Mecklenburg-Schwerin. *Deutsche med. Wochenschr.*, 1884, No. 1.

98. AHLFELD, J. The application of prophylactic instillations against blennorrhœa neonatorum. *Deutsche med. Wochenschr.*, 1884, No. 3.

99. GIELEN. Boracic acid in ophthalmology. *Deutsche med. Wochenschr.*, 1884, No. 10.

100. CONNEN. Du traitement prophylactique de l'ophthalmie des nouveau-nés par l'acide borique. *Thèse de Paris*, 1884.

101. CRITCHETT, A., and JULER, H. Case of chronic membranous conjunctivitis. *Trans. Ophth. Soc. Unit. King.*, vol. iii. p. 1.

102. SEELY, W. W. Notes on ocular therapeutics. *Trans. Amer. Ophth. Soc.*, 1883.

103. TÆNZERLES. Observations on the application of iodoform in diphtheritic conjunctivitis. *Wiener med. Presse*, 1884, No. 13, p. 403.

SCHATZ (97) saw good results from the prophylactic instillation of a 2-% solution of nitrate of silver against blennorrhœa neonatorum.

GIELEN (99) recommends a 4-% solution of boracic acid in blennorrhœa, as the 2-% solution of nitrate of silver generally employed easily decomposes (? REV.).

CONNEN (100) recommends instillations of a 3-% solution of boracic acid against blennorrhœa neonatorum, as a result of an experience of six months in the gynecological clinics of Paris ; the percentage was reduced from 12.68 to 4.76 (why not Credé's method ? REV.). v. MITTELSTÄDT.

SEELY (102) thinks the irritating effects of some samples of yellow oxide of mercury due to the presence of a bichloride. He uses the bichloride in a strength of 1 : 7,000 or 8,000 in acute catarrhal conjunctivitis, and also as an antiseptic in various operations. He employs eserine in a 4-gr. solution in corneal affections, and such a solution once a day in iritis in addition to the mydriatic. Since using eserine in increased tension he has had no occasion to perform paracentesis. BURNETT.

TÆNZERLES (103) observed diphtheria of the conjunctiva and labia in a child suffering from variola ; insufflation of iodoform improved the condition.

104. BAUMGARTEN. Some remarks on the histology of trachoma. *v. Graefe's Arch. f. Ophth.*, vol. xxx., 1, p. 277.

105. PRATO GONZÁLES. Granulaciones de la conjunctiva. *Revista special de oftalmologica*, Apr., 1884.

106. WOUKCHEWICH. Étude sur le traitement de l'ophthalmie granuleuse par l'excision du cul-de-sac conjunctival. *Thèse de Paris*, 1884.

107. DUJARDIN. De l'emploi du sublimé dans l'ophthalmie granuleuse. *Journ. des sci. méd. de Lille*, 1884, No. 2. *Rec. d'ophth.*, 1884, No. 1.

108. GRIGORIEW, J. P. Statistical material on the etiology of trachoma. *Militär. Med. Journ.*, Dec., 1883.

WOUKCHEWICH (106) recommends conjunctival excision in old cases of trachoma. Thirty clinical histories.

v. MITTELSTÄDT.

DUJARDIN (107) saw good results in six cases of trachoma follow the application of a solution of one part sublimate to ten of alcohol and 240 of water. In this concentration the solution is intended to produce the inflammation necessary for absorption and to kill the bacteria. Stronger solutions can therefore not be recommended ; rather more frequent application of a weaker one.

v. MITTELSTÄDT.

109. NEISSER. On the nature of the jequirity-ophthalmia. *Fortschritte d. Med.*, 1884, No. 3.

110. SALOMONSEN and DIRCKNIK-HOLMFELD. On the etiology of the jequirity-ophthalmia. *Fortschritte d. Med.*, 1884, No. 3.

111. KLEIN, E. Contributions to the etiology of the jequirity-ophthalmia. *Centralbl. f. d. med. Wissenschr.*, 1884, Nos. 8 and 11.

112. VOSSIUS, A. The curative results of the jequirity-ophthalmia. *Berlin. klin. Wochenschr.*, 1884, No. 17.

113. DE WECKER, L. Jequirity-ophthalmia. *v. Graefe's Arch. f. Ophth.*, vol. XXX., 1, p. 259.

114. BRUYLANT and VENNEMANN. Le jéquirity et son principe pathogène. *Bullet. de l'acad. royale de méd. de Belgique*, 1884, No. 1.

115. MANFREDI. Jequirity. *Mem. d. R. Acad. di Modena*, Feb. 1884 ; *Bolletino*, vol. vi., 8, p. 195.

116. CASPODI. Jequirity and its manner of action. *Wiener med. Wochenschr.*, 1884, No. 11. *Rec. d'ophth.*, 1884, 3, p. 155.

117. CHAUZEIX. Le jéquirity et son emploi en ophthalmologie. *Thèse de Paris*, 1884.

118. GALEZOWSKI and PARISOTTI. Du jéquirity et de son insuccès dans le traitement des granulations. *Rec. d'ophth.* 1884, No. 1, p. 31.

119. EWSEJENKO. Treatment of pannus without jequirity. *Med. Wjestnik*, 1884, No. 13.

120. SIMI. Jequirity. *Boll. d'ocul.*, vol. vi., Feb. 6, 1884.

121. KOLLOCK, C. W. Jequirity in eye-disease. *Med. News*, Dec. 15, 1883.

122. FANO. Action désastreuse exercée sur un œil par des lotions avec decoction de jéquirity. *Journ. d'ocul., et de chir.*, Nov., 1883.

123. JEQUIRITY-TREATMENT. Discussion of the *Soc. franç. d'ophth.*, Jan. 21, 1884.

NEISSER (109) denies that the jequirity-ophthalmia is an infectious disease produced by the bacilli found by Sattler. He found that the infusion acted only so long as no bacilli had developed in it. Inoculation with cultivated bacilli always failed. He never succeeded in finding the characteristic bacilli either in the secretion or in the tissue itself of the chemotic conjunctiva. He only saw the same micrococci as those found in conjunctivitis produced by ammonia. Attempts at inoculation with the secretion of the ophthalmia or with conjunctival shreds likewise failed.

SALOMONSEN and DIRCKNIK-HOLMFELD (110) came to the same conclusion. They found that the jequirity-ophthalmia is not produced by bacteria, but by a poison contained in the seed, which is soluble in water and glycerine, but insoluble in alcohol, ether, benzine, and chloroform.

KLEIN (111) also concludes from numerous experiments that the ophthalmia is not due to microbes.

VOSSIUS (112) is unequivocally opposed to the use of the infusion, as it neither cures the granulations nor exerts a beneficial influence upon the pannus, and in mild cases of pannus may even endanger the cornea.

DE WECKER (113) defends his views as to the efficacy of jequirity, in opposition to v. Hippel's strictures, and maintains that it cures true granulations and trachoma, but makes false granulations rather worse than better.

According to the communications of BRUYLANT and VENNEMANN (114) to the Belgian Academy of Medicine the action of jequirity is due to an unorganized ferment which develops when the seeds sprout. The authors produced, while observing all necessary precautions, an infusion of finely powdered seeds, free from bacilli, one drop of which produced an intense conjunctivitis in the rabbit. Out of ten three died after a few days. When this infusion was heated to 65° C. for half an hour, it completely lost its efficacy and remained so, although several days afterward the characteristic bacilli had developed. The method of preparing the ferment and its chemical and physical properties are described; it produces inflammation very readily: 0.00001 or even half of this, sets up the jequirity-ophthalmia in the rabbit. In man ½ *m.* is necessary; in well-developed granulations or dense cicatricial tissue more is required. Subcutaneous and in-

travenous injections of jequiritine, as well as internal doses, kill the animals in from seven to twenty-four hours, under the symptoms of gastro-enteritis, weakness of the heart, and almost complete prostration. v. MITTELSTÄDT.

MANFREDI (115) does not think that the jequirity-ophthalmia is produced by microbes; for, if one part of pulverized beans is macerated in one hundred parts of a 1-% solution of carbolic acid, or a 4-% solution of boracic acid, or in glycerine, the powder does not lose its efficacy. Even the precipitate obtained with tannin, sublimate or acetate of lead, from the maceration in glycerine, is effective. He never could transmit the ophthalmia by inoculation. DANTONE.

CASPODI (116) is opposed to the bacillus-theory of Sattler. Although he says that after the jequirity treatment "maculæ may remain behind on a previously clear cornea," he is, on the other hand, of the opinion that every oculist will consider jequirity an important remedy. MARCKWORT.

CHAUZEIX (117) recommends jequirity not only for trachoma, but also for scrofulous, pannous, and ulcerative corneal affections, and bases this advice on the observation of fifty cases at de Wecker's clinic. In papillary hypertrophy it fails. v. MITTELSTÄDT.

GALEZOWSKI and PARISOTTI (118) report four cases observed by de Wecker himself, in which one or several applications of jequirity produced no effect upon the granulations. In two of the cases corneal ulcers had resulted, one of these complicated with prolapse of iris. v. MITTELSTÄDT.

Based upon his own observations and those of others, EWSEJENKO (119) doubts the curative action of jequirity in pannus, considering this affection almost exclusively the result of mechanical irritation of the cornea by the granulations. He has been endeavoring for a long time to diminish the mechanical irritation by the use of various fats. In oleum nucum juglandis he thinks he has found an oil which, instilled several times a day into the eye for two to three weeks, caused marked pannus to disappear; even pannus with beginning softening of the cornea was completely cured in six to eight weeks. The granulations should be touched at the same time with sulphate of copper. HIRSCHMANN.

SIMI (120) saw most intense general symptoms follow the thrice-repeated application of jequirity in a girl of eighteen. Twenty-four hours after the first application the characteristic inflamma-

tion of the conjunctiva had developed, and extended through the whole lachrymal canal and to the naso-pharynx. Temperature 40.5° C. Twenty-four hours later the temperature had risen to 41.5°, the patient became very restless, and complained of headache and nausea. The soft palate, uvula, and tonsils were red and swollen, the tonsils covered with a whitish exudation ; difficulty of breathing and deglutition ; externally, swelling of the neck and submaxillary region. All these symptoms rapidly disappeared after the third day ; three weeks later the trachoma was almost gone ; only the tumor in the lachrymal sac remained and probably must be operated. DANTONE.

KOLLOCK (121) concludes that jequirity acts beneficially in chronic cases only, and is contra-indicated in acute cases.

BURNETT.

FANO (122) observed violent reaction, with perforation of the cornea and atrophy, after the application of jequirity-infusion, repeated six times, in a girl eight years old, with buphthalmus, infiltration of both corneæ, and much impaired vision.

v. MITTELSTÄDT.

COPPEZ (123) made use of jequirity in 164 cases of conjunctivitis granulosa, 140 of which were complicated with pannus ; of these 140, 78 were cured (Relapses ? REV.). Jequirity is also an excellent remedy for stimulating the vascularization of the cornea in atonic ulcers of the cornea and asthenic parenchymatous keratitis. Peiron Menacho concludes from 300 cases observed at de Wecker's clinic that jequirity acts beneficially in scrofulous pannus, parenchymatous keratitis, and sclerosis. Vallez used jequirity in 25 cases of granular conjunctivitis, and obtained 10 excellent and 10 good results and 5–6 failures. Abadie would treat only inveterate cases of granular conjunctivitis with jequirity. Nicati divides the course of granular conjunctivitis into three stages ; he thinks jequirity is indicated only in the third (" periode fongueuse "). Dor has obtained equally good results with the old remedies as with jequirity. Galezowski treated 10 cases with jequirity ; in some of them the result was at first satisfactory, but relapses were not prevented. Terson obtained excellent results with jequirity, especially in that stage of trachoma in which scars are intermingled with the granulations. Vacher had striking success in 10 cases out of 11 treated with jequirity. Armaignac treated a case of trachoma affecting both eyes with jequirity, and obtained a good result in one eye, but failed in the other. Gayet

treated 30 children affected with trachoma with jequirity, but failed to obtain a single clearly good result. Later trials also failed. Vennemann thinks the active principle of jequirity is a ferment. According to Boucheron the results with jequirity are very poor when it is applied in the first stage of trachoma, or in acute cases. Landolt found that in the first stages of trachoma no remedy surpasses the sulphate of copper; jequirity should be reserved for the inveterate cases in which sulphate of copper failed. Panas is very cautious in expressing his views. Judging from his limited experience jequirity can only be applied in chronic cases, which had resisted other methods, but are cured with the new remedy with certainty. It seems to be especially effective in corneal opacities. One case of xerophthalmia was very much improved. Parinaud seeks the cause of the contradiction in the results obtained by Gayet and Coppez in the different age of the patients. Sulphate of copper has always been good enough for Parinaud. Are there no relapses in jequirity cases? Chibret and Grand attribute the difference in results to the different geographical conditions. Parisotti reviews a paper by Fortunati (Giorn. internaz. de scienze med., anno 5), who has compiled a number of Italian articles on this subject. Among 140 cases 20 partly unsatisfactory results. According to de Wecker, the jequirity question is not yet ripe for decision; but it is certain that the remedy is contra-indicated in the acute stage. Wecker supports Sattler's opinion against that of Vennemann (*v.* above) by the following experiment: Martineau applied jequirity to the vagina without producing any effect; the inflammation did not set in until air had been admitted. MARCKWORT.

124. HIRSCHBERG, J. Operation for symblepharon. *Centralbl. f. pract. Augenhk.*, 1884, p. 144.

125. RAMPOLDI and STEFANINI. Angioma primitivo della congiuntiva. *Ann. di ottalm.*, vol. xiii., 1, p. 74.

126. THALBERG. The question of xerosis of the conjunctiva. *Wjestnik*, 1884, i., p. 13.

HIRSCHBERG (124) succeeded in curing a case of symblepharon after facial erysipelas, by transplanting a flap without a pedicle from the mucous membrane of the mouth.

In the two cases of angioma of the conjunctiva mentioned by RAMPOLDI and STEFANINI (125), the tumor in one of them occupied the lower cul-de-sac; in the other it was next to the caruncle. DANTONE.

Besides the usual xerosis epithelialis occurring in sucklings and weakened individuals, THALBERG (126) describes another form, which he observed in four soldiers of the guard-regiment. A white, superficial infiltration of the epithelium develops, more frequently in the lower than in the upper fornix, which lasts for some time, constantly relapses (for months), is followed by moderate reaction, and resembles the eschar of lunar caustic. He attributes it to scurvy. HIRSCHMANN.

127. MEYHÖFER. Remarks on serpent ulcer and the treatment of corneal ulcer by scraping and iodoform. *Zehender's klin. Monatsbl. f. Augenhk.*, 1884, vol. xxii., p. 151.

128. HEISRATH. Treatment of corneal opacities. *Deutsche med. Wochenschr.*, 1884, No. 2.

129. ORTMANN, P. Experimental investigations on central keratitis. *Inaug. Diss.* Königsberg, 1884.

130. KUHNT, H. Proposal of a new method of treating certain forms of corneal ulcer. Wiesbaden, Bergmann, 1884.

131. NIEDEN, A. Two cases of neuro-paralytic keratitis. *Arch. f. Augenhk.*, vol. xiii., p. 249.

132. PROUFF, J. M. De la sclérotoscopie. Méthode à suivre pour les observations ayant trait à la kératite prétendue astigmatique. *Rev. clin. d'ocul.*, 1884, No. 2, p. 25.

133. ANGELUCCI. Sulla refrazione e correzione delle cornée coniche ed ectatiche. *Ann. di ottalm.*, vol. xiii., 1, p. 35.

134. WECKER, DE, et MASSELON. La kératoconométrie. *Rev. clin. d'ocul.*, 1884, i., p. 5.

135. RAMPOLDI. Un nuovo caso di transitorio mecanica infiltrazione linfatica nella cornea. *Ann. di ottalm.*, vol. xiii., 1, p. 70.

136. MASSON, A. Étude sur l'astigmatisme cornéen et la perception des couleurs chez les opérés de cataracte. *Thèse de Lyon*, 1883.

MEYHÖFER (127) found that the results of a simple medicamentous treatment of corneal ulcers are very poor. Neither did the treatment of serpent ulcer with iodoform alone succeed well; but the results were much more favorable when it was dusted upon an ulcer previously scraped out with a sharp spoon. When this method also failed, Saemisch's operation had to be resorted to.

KUHNT (130) publishes a series of cases in which he succeeded in healing torpid corneal ulcers by covering them with a conjunctival flap.

NIEDEN (131) observed neuro-paralytic keratitis of the left eye in paralysis of the fifth and sixth nerves after injury of the motor zone of the parietal lobe, and a similar case after fracture of the base of the skull.

PROUFF (132) is satisfied, from investigations extending over several years, that congenital regular astigmatism is always accompanied by abnormal curvature of the cornea.

ANGELUCCI (133) describes at greater length his ophthalmometric measurements in keratoconus and corneal ectasia, made and published one and a half years ago. The vision of six patients was somewhat more improved with conical lenses (rounded off at the apex) than with spherical and cylindrical glasses.

DANTONE.

DE WECKER and MASSELON (134) have constructed an apparatus for measuring and estimating in dioptries the deviation of curvature in keratoconus, which, by comparison of central and peripherical reflex images, serves to determine the curvature of the cornea. v. MITTELSTÄDT.

RAMPOLDI (135) observed another case of saturation of the cornea with lymph when the head was bent forward. The patient was an ill-fed, anæmic boy of twelve, suffering from iridocyclitis, in whom the phenomenon could be easily produced. When the head was held upright again, the cornea cleared up in less time than it required to become opaque. DANTONE.

MASSON (136) discusses corneal astigmatism after cataract-extraction; in the first weeks it amounts to about 4 D, gradually diminishes to 1–3 D, and may even entirely disappear. It cannot be entirely corrected with cylindrical glasses, which should not be prescribed before complete cicatrization—*i. e.*, the end of two months. Masson observed that patients operated for cataract could not distinguish colors without a correcting glass; called light shades of yellow pale green, and pink violet, and corrected their mistake only when provided with the proper glass.

v. MITTELSTÄDT.

XII.—IRIS.

BY DR. NIEDEN.

137. v. HASNER. Operative removal of persistent pupillary membrane by corelysis, and presentation of the patient at the meeting of German physicians. *Prager med. Wochenschr.*, No. 47, p. 457.

138. REYNOLDS, D. S. Cystoid cicatrix. *N. Y. Med. Herald*, Jan., 1884.

139. SCHELL, H. S. Case of tubercle of the iris. *Trans. Amer. Ophth. Soc.*, 1883.

140. WADSWORTH, D. F. Case of tuberculosis of the ciliary body and iris. *Trans. Amer. Ophth. Soc.*, 1883.

SCHELL's (139) patient was a boy nine years of age, who when first seen was suffering from what seemed to be plastic iritis. Three months later a small yellowish-white nodule the size of a pin-head was seen projecting from the nasal side of the pupil, which gradually increased in size, and finally had a few blood-vessels running over its surface. The eye was enucleated, and on examination there were found two or three tubercular masses embedded in a mass of organized inflammatory product, which nearly filled the anterior and posterior chambers. The child was under treatment for coxalgia. BURNETT.

WADSWORTH's (140) patient was a girl eight and a half years old, who showed a yellowish reflex from the pupil of the left eye; the cornea was hazy, pupil moderately dilated, and there was some ciliary congestion. In a month there was a staphyloma in the upper ciliary region of $5'''$ by $3'''$; no trace of iris to be seen; anterior chamber nearly filled with a growth. The eye was enucleated, and on examination the growth from the ciliary region was found to contain granulation-tissue, giant-cells, and the bacillus of Koch. The child died five months afterward from tubercular meningitis. BURNETT.

v. HASNER (137) operated a case of persistent pupillary membrane in a person twenty-three years old. It was easily detached from the capsule, while the threads inserting themselves to the anterior surface of the iris were torn without difficulty, so that the membrane could be entirely removed. V increased 50%. A microscopic examination has not yet been made.

REYNOLDS (138) reports another case of cystoid cicatrix treated according to the method described by himself and published in the *Trans. Amer. Ophth. Assoc.*, 1879. He makes an incision along the sclero-corneal juncture from $\frac{1}{8}''$ above to $\frac{1}{8}''$ below. The iris is cut loose from its attachment to the cornea, and the cicatricial mass cut away with scissors. A curved cornea-needle armed with sewing-silk is then passed through the edge of the cornea and through the corresponding point of the sclera; the suture is then drawn through and tied. Another similar suture is

then inserted in the lower half of the elliptical opening. The eye then presents the appearance of having been subjected to an ordinary iridectomy. BURNETT.

XIII.—CHOROID.

141. BIRNBACHER, A. On pigmentation of melanotic sarcomata. *C. f. A.*, vol. viii., p. 38.

142. BRAILEY. Tubercle of the eye. *Trans. Ophth. Soc. Unit. Kingd.*, vol. iii., p. 129.

143. MASSELON. Des infiltrations vitreuses de la rétine et du nerf optique. *Soc. franç. d'ophth.*, Jan. 28, 1884.

144. MULES. Panophthalmitis. *Trans. Ophth. Soc. Unit. Kingd.*, 1883, vol. iii., p. 55.

145. WARNER. Tubercle in choroid. *Trans. Ophth. Soc. Unit. Kingd.*, vol. iii., pp. 126 and 813.

BIRNBACHER (141) tries to prove that all the pigment in the case of epibulbar melano-sarcoma, described in the November number of the *C. f. A.*, was of hematogenous origin, microscopic examination showing that it could not have been derived from the choroid or from the embryonic condition.

BRAILEY (142) reports the case of a child two years old, in whom there was rapid enlargement of the right eyeball, deep anterior chamber, posterior synechiæ, medium-sized clear pupil. The ophthalmoscope showed the retina apparently detached. The eye was excised, and examination proved the existence of the detachment, which was bulged forward by an abundant, clear, yellowish liquid. Projecting from the region of the papilla, and immediately surrounding the choroid was a mass the size of a large pea. A few isolated patches of a similar nature were found in the adjacent sclera. Histologically this appeared to be a tuberculous mass. FITZGERALD.

WARNER (145) recognized tubercles of the choroid by the ophthalmoscope in a child nine years old. There was no optic neuritis. In the right eye the disc was reddish. There was general miliary tuberculosis, but no meningitis. FITZGERALD.

MASSELON (143) reports on the colloid excrescences arising from the lamina vitrea of the choroid and extending into the vitreous, which clinically have been studied very little thus far; they occur mainly in the neighborhood of the disc. When seen with the opthalmoscope they appear as whitish dots of about the diameter

of a thick retinal blood-vessel. (These excrescences have long been known in German literature.—N.) MARCKWORT.

MULES (144) saw glaucoma supervene on myopia in both eyes in a young man twenty-two years old. Iridectomy was performed, which left a cystoid cicatrix in the right eye. Two years and a quarter later the right eye became inflamed suddenly, and in twenty-four hours was lost from panophthalmitis. Mules can only conclude that the case was one of purulent absorption through the cystoid cicatrix. FITZGERALD.

XIV.—GLAUCOMA.

146. PFLÜGER. Cases of hemorrhagic glaucoma. *Report of the Ophthalmic Clinic of the University of Berne for the Year 1882.* Berne : J. Dalp, 1884, 79 pp.

PFLÜGER (146) reports a case of hemorrhagic glaucoma in a woman whose left eye had become totally blind from melanosarcoma of the choroid. After vainly endeavoring to check the attacks with pilocarpine and eserine, she was finally cured by enucleating the blind eye and performing iridectomy in the other.

XV.—SYMPATHETIC OPHTHALMIA.

147. ABADIE. Quelques considérations pratiques sur l' ophthalmie sympathique. *Arch. d' ophth.*, 1884, vol. iv., No. 2.

148. BOWMAN, W. Recovery from severe sympathetic ophthalmia. *Trans. Ophth. Soc. Unit. Kingd.*, 1883, vol. iii., p. 69.

149. DOLSCHENKO, B. Two rare cases of sympathetic ophthalmia. *Wjest. Ophth.*, vol. ii., pp. 148–160.

150. FRÄNKEL. Remarks on the pathogeny of sympathetic ophthalmia. *C. f. A.*, vol. viii., p. 43.

151. FROST, W. A. Sympathetic ophthalmia. *Trans. Ophth. Soc. Unit. Kingd.*, 1883, vol. iii., p. 73.

152. FUCHS, E. Sympathetic paralysis of accommodation. *Zehender's klin. Monatsbl. f. Augenhk.*, vol. xxii., p. 23.

153. SNELL. Sympathetic ophthalmia. *Trans. Ophth. Soc. Unit. Kingd.*, 1883, vol. iii., p. 75.

154. SPALDING, J. A. Case of sympathetic neuroretinitis. *Trans. Amer. Ophth. Soc.*, 1883.

155. WALKER, G. E. Sympathetic ophthalmia. *Brit. Med. Jour.*, No. 10, 1883, p. 923.

DOLSCHENKO (149) reports two cases of sympathetic ophthalmia.

First case: Left eye blind for ten years, was injured by a twig. Iridocyclitis. Five months later impairment of V in the right eye, moderate lachrymation, photophobia, and sluggish reaction of the pupil; no redness. The ophthalmoscope showed reddish-yellow chorio-retinal spots. Enucleation of the left eye. On opening it a small splinter of wood was found near the ora serrata. Second case: Received a blow with the fist on the right eye ten years ago; immediate loss of V; eye gradually became phthisical. Since then pain and redness at times in the right eye, and lachrymation and photophabia in the left. Last year, after a cold, inflammation in the atrophic and impairment of V, photophobia, photopsia, and lachrymation of the left eye, *but no redness.* In the left M = $\frac{1}{4}$. Fingers counted with correcting glass at only four feet. With the ophthalmoscope: posterior staphyloma, no changes at the macula lutea, a number of white and pigmented spots in the retina and choroid. Enucleation of the right eye. The choroid was found completely detached, ossified, and pressing the retina, which had been torn from the optic nerve, against the calcareous lens. HIRSCHMANN.

FRÄNKEL (150) reports a case of sympathetic ophthalmia, which took the form of papillitis without any subjective symptoms and without impairing vision. The clinical history, however, is too brief to establish the sympathetic nature of the affection.

In the case observed by SPALDING (154), the right eye in a woman fifty-six years of age, with no history of syphilis, was destroyed by a blow from the horn of a cow. In five weeks the left began to fail, and in the course of several weeks became blind. When it was recovering its vision it was seen by Spalding, who found a typical neuroretinitis, but evidence of no other disease past or present. On enucleation of the lost eye V gradually returned to $\frac{20}{30}$. BURNETT.

FUCHS (152) reports a case of paralysis of accommodation, which developed eight days after the severely injured left eye had been enucleated, without any symptoms of irritation and unchanged refraction (emmetropia). Twelve cases of cure among fourteen are reported, in which the sympathetic inflammation did not develop until after the enucleation. (The sympathetic nature of the affection is not entirely beyond doubt.)

In view of the doubts occasionally expressed as to the efficacy and advisability of enucleation before or at the outbreak of a sympathetic affection, ABADIE (147) maintains the absolute neces-

sity of *immediately removing* an eye with practically useless vision. Report of three cases, benefited by treatment. In one case the cause of sympathetic ophthalmia was the wearing of an artificial eye on a stump left after Critchett's operation for staphyloma; in another, incarceration of the iris after cataract-extraction. In the third case the sympathetic iridocyclitis began eight years after an injury, was cured completely by enucleation, returned three years later, and was cured again, after exenteration of the orbit on account of tenderness to pressure in its depth. v. MITTELSTÄDT.

BOWMAN (148) reports a remarkable case of recovery after long-continued treatment. The exciting eye was removed.

FITZGERALD.

FROST (151) records a case in which the exciting was not removed, but there was a good result in the sympathizing eye, though the pupil had numerous tough adhesions, and the margins of the disc were blurred; V = $\frac{20}{30}$. FITZGERALD.

In SNELL'S (153) case the symptoms subsided on freeing an incarcerated portion of iris in the exciting eye. FITZGERALD.

WALKER (155) strongly advocates mercurial inunctions in sympathetic ophthalmia. The oleate of mercury is the preparation he appears to use. FITZGERALD.

XVI.—LENS.

156. DUJARDIN. Luxation traumatique du cristallin; extraction. *Journ. des sci. méd. de Lille*, 1883, No. 23.

157. KAZAUROW. Report on a first hundred of cataract-extractions. *Wjestnik Ophth.*, 1884, vol. i., pp. 23–39.

158. FIEUZAL. Cataracte hémorrhagique. *Soc. franç. d'ophth.*, Jan. 31, 1884.

159. DA GAMA PINTO. Des hémorrhagies consécutives à l'extraction de la cataracte. *Rev. gén. d'ophth.*, vol. iii., 3, 1884.

160. GAYET. De la perception des rayons ultra-violets par les opérés de cataracte. *Soc. franç. d'ophth.* Jan. 31, 1884.

161. KNAPP, H. Report of the eighth series of one hundred consecutive cataract-extractions. These ARCH., vol. xii., 1, p. 269.

162. QUAGLINO. Regli antisettici nella cura consecutiva all' estrazione della cataratta. *Gazz. d'ospitali*, No. 17.

163. SZILI, A. Spontaneous absorption of a cataractous lens. *C. f. A.*, vol. viii., p. 17.

164. THEOBALD, S. Two cases in which trituration of the

cortex was practised in connection with preliminary iridectomy to hasten the development of slowly ripening cataract. *Trans. Amer. Ophth. Soc.*, 1883.

165. WALKER, L. P. Statistical report of sixty-three cataract-extractions performed at the N. Y. Eye and Ear Infirmary during the year ending September 30, 1883. *Sixty-third Annual Report of the Institution*, 1883.

166. WEBSTER, D. Report of thirty-five cases of cataract-extraction. *Trans. Amer. Ophth. Soc.*, 1883.

SZILI (163) saw spontaneous rupture of the capsule of a ripe, swollen cataract, followed under glaucomatous symptoms by gradual absorption, so that finally good vision was obtained.

DUJARDIN (156) extracted a lens which twelve years ago had been dislocated into the vitreous, on account of iridocyclitis, after he had brought it into the interior chamber through the dilated pupil. Recovery. V. MITTELSTÄDT.

Among one hundred extractions (fourteen of them complicated cataract) KAZAUROW (157) had two cases of purulent keratitis and panophthalmitis (once in an unripe cataract); in three cases, occlusion of the pupil, with $V = \frac{1}{\infty}$ (twice in hypermature and once in unripe cataract); secondary cataract necessitating another operation in thirteen cases; once delirium nervosum. The author confirms the hastening influence of iridectomy on the ripening of the cataract. He made a linear section according to Graefe. He advocates strict antiseptic precautions, a sublimate solution 1:1000, when it does not irritate, or a 4-% solution of boracic acid for irrigation before and after the operation. The instruments are washed in alcohol. A film of iodoform is spread over the wound. Bandaged with hygroscopic cotton. $V > \frac{1}{10}$ in 78 cases, $V < \frac{1}{10}$ in 17, $V = \frac{1}{\infty}$ in 3, $V = 0$ in 2. HIRSCHMANN.

KNAPP (161) reports an eighth hundred of cataract-extractions, and has tabulated them in such a manner that their course and result can be easily followed. The section was made at the sclero-corneal margin; iridectomy was made smaller than formerly, the capsule opened at the periphery, the lens removed by pressure, and the wound cleansed very carefully so as to insure healing by first intention. Antiseptics were used in every other case. The results are very good: 90 % excellent results, 8 % moderate, and 2 failures. The cases are also arranged with a view to the age of the patients, their general health, and the nature of the cataract. There was no difference in the results obtained under

antiseptic precautions and without them. Secondary operations in 38 cases, all with good results.

Of the 63 extractions reported by WALKER (165), 58 were according to Graefe, 2 according to Beer, 2 peripheral, and 1 linear. Of these 37 had good V, 7 useful V, 10 perception of light, 4 no p. l. The other 5 are not noted for various reasons.

BURNETT.

WEBSTER (166) reports 35 extractions. The method was that of Graefe, and the results were as follows: In 2 V = $\frac{8}{10}$; in 3 = $\frac{8}{10}$; in 6 = $\frac{8}{10}$; in 8 = $\frac{8}{10}$; in 3 = $\frac{8}{100}$; in 4 = $\frac{8}{200}$; in 1 = $\frac{30}{\text{fingers}}$; in 1 = $\frac{4}{200}$; in 1 = $\frac{2}{\text{fingers}}$; in 1 = p. l.; in 5 = 0.

BURNETT.

FIEUZAL (158) discusses a case of cataract, in which, immediately after the iridectomy, there was a hemorrhage, followed by the escape of the lens and vitreous. He was obliged to enucleate the eye on account of consecutive panophthalmitis. The other eye had been operated two weeks before without any accident or unfortunate result. DIANOUX saw a similar case. ABADIE agrees with WARLOMONT (*cfr. Ann. d'ocul.*, Jul.-Aug., 1883, and *Arch. f. Augenheilk.*, vol. xii., Rev. No. 967) in saying that, after observing such an accident in the first eye, the second should only be operated after previously injecting ergotine at the temple, and continuous compression of the carotid during the operation and for the preceding twenty-four hours.

MARCKWORT.

DA GAMA PINTO (159) reports, from the Heidelberg clinic, two cases of severe intra-ocular hemorrhage causing the loss of the eye, and reviews similar cases. In both cases the tension was normal, and the urine free from albumen and sugar. The extraction was performed under anæsthesia, and the hemorrhages took place several hours later, immediately after vomiting.

v. MITTELSTÄDT.

QUAGLINO (162) thinks that the failures in cataract-operations cannot be ascribed, in most cases, to parasitic causes, and therefore places but little faith in the efficacy of antiseptics.

DANTONE.

In both cases operated by THEOBALD (164), the lenses became perceptibly more opaque within a few days after the operation.

BURNETT.

GAYET and CHARDONNET (160) experimented on patients operated for cataract, with a view of determining their power to

perceive the ultra-violet rays. The patients were able to do so, while Gayet and Chardonnet failed, on account of the lens still in the eye (*cfr.* Chardonnet: Vision des radiations ultra-violettes, *Compte rendu des séances de l'acad.*, No. 8, and *Arch. f. Augenheilk.*, vol. xii., p. 494). MARCKWORT.

XVII.—VITREOUS.

167. NETTLESHIP. Ophthalmitis simulating glioma in children. *Trans. Ophth. Soc. Unit. Kingd.*, 1883, vol. iii., p. 36.

NETTLESHIP (167) considers that these cases demand closer attention, especially in reference to their morbid anatomy and their clinical and pathological relationships. He indicates some of the leading points of difference between these cases and those of true glioma, and he reports twenty-seven cases from his own practice and other sources, and concludes with an analysis of the series. FITZGERALD.

XVIII.—RETINA AND FUNCTIONAL DISTURBANCES.

168. ADAMS. Changes in macula. *Trans. Ophth. Soc. Unit. Kingd.*, vol. iii., p. 113.

169. ARMAIGNAC. Note sur un cas de guérison spontanée de décollement ancien de la rétine, mais sans retour de la vision. *Rev. clin. d'ocul.*, 1884, No. 2.

170. BERNARD, D. Un cas de suppression brusque et isolée de la vision mentale des signes et des objèts (forme et couleur). Confér. de M. le Prof. Charcot à la Salpêtrière. *Progr. méd.*, Jul. 21, 1883.

171. CHIBRET. Un cas extraordinaire de l'héméralopie congénitale. *Arch. d'ophth.*, 1884, vol. xiv., No. 1.

172. DARIEZ. Diagnostic de l'amblyopie par l'exploration électrique du nerf optique. *Soc. franç. d'ophth.*, Jan., 29, 1884.

173. DENTI. Sulla retinite pigmentosa. *Gazz. med. Lomb.*, Nos. 12-15, Mar., 1884.

174. DUFOUR. Sur le champ visuel des hémianopsiques. *Soc. franç. d'ophth.*, Jan. 29, 1884.

175. DUJARDIN. Un cas d'amaurose intermittente. *Journ. de sci. méd. de Lille*, 1883, No. 23.

176. FANO. Décollement de la rétine guéri par une opération d'iridectomie. *Journ. d'ocul. et de chir.*, 1883, No. 130, p. 112.

177. FONTAN. Diagnostic positif de l'héméralopie. *Soc. franç. d'ophh.*, Jan. 30, 1884.

178. GALEZOWSKI. Des differentes variétés de décollement rétinien et de leur traitement. *Rev. d'ophth.*, Jan., 1884, and *Soc. franç. d'ophth.*, and *Rec. d'ophth.*, Feb., 1884.

179. GILLET DE GRANDMONT. De l'action des courants électriques appliqués au voisinage du cerveau et des résultates qu'ils produisent en particulier dans l'œil. A. Coccoz, Paris, 1883.

180. GUELLIOT. De l'amaurose nicotinique (mémoire couronné par la société contre l'abus du tabac). *Gaz. d'ophth.*, 1883, p. 136.

181. GUNN. Peculiar appearance in retina near optic disc. *Trans. Ophth. Soc. Unit. Kingd.*, vol. iii., p. 110.

182. HORROCKS. Facial and ocular nævus. *Trans. Ophth. Soc. Unit. Kingd.*, vol. iii., p. 106.

183. RAMPOLDI. Polso spontaneo della arterie retiniche in alcuni casi di cateratta corticale incipiente. *Gazz. med. Lomb.*, 1884, No 10.

184. SCHÖLER. Report of cases of lateral and temporal hemianopsia. Contribution to the pathology of the optic nerve and retina in constitutional diseases. Berlin, Peters, 1884, p. 60.

185. STORY and BENSON. Aneurysma on retinal vessels. *Trans. Ophth. Soc. Unit. Kingd.*, vol. iii., p. 105.

186. WILBRANDT, H. Ophthalmiatric contributions to the diagnosis of cerebral affections. Wiesbaden, 1884, J. F. Bergmann.

ADAMS (168). The peculiar changes are shown in two drawings, and are apparently greater in the left eye, in which V was reduced. FITZGERALD.

GUNN'S (181) patient was a girl, æt. sixteen. In the right the ophthalmoscope showed very minute, yellowish-white shining dots in the retina for some distance around the disc, especially to the nasal side and below. Outline of disc rather indistinct. Large veins full and somewhat tortuous. Left eye the same. Refraction H. The right eye in patient's mother showed similar minute spots, more in left ; also H. There were eight children, including the patient, and all of those examined (five) presented the same appearance in their retinæ. The refraction in four is noted as H. Gunn says he has since examined a large number of patients, with

reference to this peculiar appearance, and that he has found it present in four additional cases. FITZGERALD.

HORROCKS' (182) patient, æt. nine, had been subject to fits of an epileptic nature since birth, which cause clonic spasms on left side of trunk and limbs. Hemiplegia of left side. Right side of the face, including the skin of the eyelids, and forehead is covered with a nævus which does not cross the median line. Net-work of blood-vessels in the conjunctiva on each side of the cornea in right eye. Left eye quite normal. The retinal blood-vessels in the right eye were exceedingly tortuous, but in the left normal. Horrocks suggests that possibly vessels supplying the pia mater on the right side may be similarly affected, and that this may have something to do with the fits. FITZGERALD.

STORY and BENSON (185) report and give a plate of a case of aneurysmal swellings in the retinal arteries in a peculiar case of retinitis. FITZGERALD.

DENTI (173) discusses at length the prevailing views on retinitis pigmentosa and tries to establish a connection between it and the physiological movement of the pigment epithelium along the rods and cones discovered by Bull. DANTONE.

RAMPOLDI (183) saw spontaneous pulsation of the central retinal artery in four persons affected with beginning cortical cataract. He explains the phenomenon by assuming an increase of the intra-ocular pressure produced by the swelling of the lens. In two of the patients the refraction had also changed, so that they could read again without the aid of glasses. DANTONE.

ARMAIGNAC (169) reports a case of extensive detachment of the retina in a slightly myopic eye. The diagnosis was confirmed by others. The patient did not undergo any treatment. Three years later, when he appeared again, not a trace of the detachment could be discovered. There was now, however, atrophy of the optic nerve and amaurosis. v. MITTELSTÄDT.

FANO (176) saw a recovery from detachment of the retina after an iridectomy. Three months later the retina was still in position. v. MITTELSTÄDT.

GALEZOWSKI (178) discusses the prodromi of detachment of the retina. Among these the sensation of a veil drawn across the field of vision, shadows and clouds moving up and down, are characteristic of myopic eyes, as well as sensations of light and color. Among 647 patients there were 236 women; the occupation of men predisposes them more to detachment. Next to myopia

injuries may be cited as the cause (sixty-one cases), also albuminuria, diabetes, and erysipelas; it may sometimes even be of sympathetic origin. v. MITTELSTÄDT.

The causes of detachment of the retina are various. Syphilis, arthritis, injuries, etc., so that all cases cannot be treated in the same manner. Horizontal position and rest in bed are of the greatest importance, and should be kept up at first day and night, and afterwards 12–18 hours daily. If the patients are suffering from syphilis or any other disease, they should be treated accordingly. MARCKWORT.

BERNARD (170) reports a case of mental blindness (Seelenblindheit) which suddenly developed in a man as the result of great excitement. The patient remained mentally very active, as his memory of hearing replaced the defect in vision.

v. MITTELSTÄDT.

DARIEZ (172) and his teacher Abadie think that from the varying electrical sensibility they can diagnosticate affections of the optic nerve when they cannot yet be recognized with the ophthalmoscope. A normal eye has a sensation of light, when a current of $0—\frac{1}{10}$ milli-Ampères passing through it is interrupted. In cases of atrophy with a bad prognosis the current must have a strength of 0. 5—10 milli-Ampères to produce a sensation of light. In toxic and congenital amblyopia the electric irritability is normal. Monoyer and v. Wecker think this method is too unreliable for diagnostic purposes on account of the numerous sources of error.

MARCKWORT.

GILLET DE GRANDMONT (179) recommends the constant current in cases in which it is desirable to stimulate the intra-ocular circulation, increase the sensibility of the retina, and alter the secretion; it should therefore be employed in chronic irido-choroiditis, beginning atrophy of the optic nerve, glaucoma, and hyalitis.

v. MITTELSTÄDT.

In regard to the differential diagnosis between tobacco- and alcohol-amblyopia, GUELLIOT (180) states that the former at first only affects one eye, that there is hemeralopia and good color-perception. v. MITTELSTÄDT.

SCHÖLER (184) reports fourteen cases of hemianopsia, twelve of homonymous lateral and two of temporal hemianopsia. Of the latter one is probably due to a brain-tumor, the other the result of a fracture of the base of the skull. (If the author thinks that similar cases have thus far not been reported, his attention may

be called to those published by the Reviewer in the *Arch. f. Augenhk.*, vol. xii., pp. 30 and 39.)

WILBRANDT (186) seeks to localize a lesion in the gray substance of the visual centre from the symptoms of lateral hemianopsia, and has investigated the literature of the subject for this purpose. He also adds the report of a case of right-sided lateral hemianopsia, with disturbances of sensibility, in a young woman in childbed.

XIX.—OPTIC NERVE.

187. HIRSCHBERG, J. On embolism of the central retinal artery. *Centralbl. f. Augenhk.*, vol. viii., p. 14.

188. MAGNUS, H. Report of cases of congenital malformations of the optic nerve. *Zehender's klin. Monatsbl. f. Augenhk.*, vol. xxii., p. 85. With an illustration.

189. UHTHOFF. On atrophy of the optic nerve. Berl. Ges. f. Psych. u. Nervenkrankh., Sitzung v., 14th Jan., 1884, and Beiträge zur Pathologie des Sehnerven u. d. Retina bei Allgemeinerkrankungen. Berlin: Peters, 1884, p. 1.

MAGNUS (188) saw, after removing the cataract, the optic disc of the right eye reduced to a small whitish crescent (oblique position, REV.), whose inner edge was bordered by brown pigment, in a boy descended from a father with congenital cataract, and three of whose five brothers and sisters were similarly affected. The retinal blood-vessels emerged from the temporal, deeply depressed portion of the disc. There was at the same time nystagmus and a high degree of amblyopia.

HIRSCHBERG (187) reports two cases of embolism of the central retinal artery showing the peculiar and rare (only four cases thus far) phenomenon of motion in the column of blood. It took place in the arteries both in a centrifugal as well as centripetal direction, and was arhythmic. In the first case, which ended in amaurosis and came to an autopsy, the phenomenon suddenly disappeared on the fourth day; in the second, in which sight was partially restored, also on the fourth day. In the first case there was insufficiency and stenosis of the semilunar valve of the aorta; in the second, insufficiency of the semilunar valve, with dilatation of the left and hypertrophy of the right ventricle in both cases. Mauthner's massage did not seem to exercise any directly beneficial influence in the second case, though indirectly it did so.

UHTHOFF (189) examined 134 or 183 resp. cases of atrophy of

the optic nerve, and found 30 % or 37 % resp. of spinal origin, 24 % or 25 % resp. of cerebral origin, 5 % of genuine progressive atrophy, 6 % due to neuritis, 3 % with hereditary predisposition, 3 % due to orbital affections, 4.2 % or 5 % resp. due to dementia paralytica, and the remainder ascribable to the abuse of alcohol and tobacco, loss of blood, etc. Neither the medial nor temporal side of the defect in the field of vision was found to be characteristic of atrophy. In five of the cases of spinal origin there was at the same time paralysis of some ocular muscle or muscles. He also adds the report of a case of temporal hemianopsia of both eyes, due to fracture of the base of the skull and injury of the chiasma.

XX.—INJURIES AND FOREIGN BODIES (PARASITES).

190. ADAMS. Foreign body near macula. *Trans. Ophth. Soc. Unit. Kingd.*, vol. iii., p. 115.

191. FANO. Corps étranger ayant pénétré dans la chambre antérieure, éliminé spontanément par une perforation de la cornée au bout de sept semaines. *Jour. d'ocul. et de chir.*, 1883, p. 101. Cases.

192. FRANKE, E. On some cases of injury to the eye. *Berl. klin. Wochenschr.*, 1884, No. 5.

193. HOFMANN, FRANZ, Prof. On traumatic conjunctivitis in miners. *Arch. f. Hygiene*, vol. i., pp. 40–48.

194. HOLT, E. E. Commotio retinæ; or some of the effects of direct and indirect blows to the eye. *Trans. Amer. Ophth. Soc.*, 1883.

195. ISSIGONIS (Smyrna). Extraction of a piece of gun-cap of considerable size from the vitreous. *C. f. A.*, vol. viii., p. 80.

196. DE LAPERSONNE and VASSAUX. Clinique ophthalmologique de la Faculté. Des altérations pigmentaires de la rétine consécutives à une traumatisme de l'œil. *Arch. d'ophth.*, vol. iv., No. 1.

197. MANZ, W. Two cases of cysticercus cellulosæ. *Arch. f. Augenhk.*, vol. xiii., p. 198.

198. SNELL, SIMON. The magnet and electro-magnet in ophthalmic surgery, and removal of a piece of steel from the vitreous by the electro-magnet. *British Med. Jour.*, 1883, Nos. 10 and 17, pp. 923 and 959.

ADAMS (190) observed a case in November, 1881, in which a small triangular chip of steel flew off an anvil and penetrated the

patient's eye about 7 *mm.* from the corneal margin, and then lodged in the retina near the macula. V for some hours after the injury was reduced to doubtful p. l., but gradually improved till in May, 1883, V = $\frac{20}{30}$ and J. 1. A plate illustrates the appearance in the fundus. FITZGERALD.

FANO (191) saw a foreign body, which had entered the anterior chamber, spontaneously eliminated through the cornea after remaining in for seven weeks.

FRANKE (192) reports a case of injury to the right eye by the thrust of a steel pen, producing division of the anterior capsule and cortical cataract. The opening in the capsule closed again, the opaque lens was absorbed, and patient was discharged with V = $\frac{1}{3}$ with + 2.75 D.

HOFMANN (193) saw a peculiar form of conjunctivitis in miners who were engaged in damming up quicksand in a shaft. It was produced by the entrance of very minute grains of sand into the conjunctival sac. Glasses and other protective appliances failed to keep it out, until finally the difficulty was overcome by wearing a broad-brimmed hat.

ISSIGONIS (195) succeeded in extracting a piece of gun-cap, 4 *mm.* long and 1.25 *mm.* wide, from the vitreous, under antiseptic precautions.

SNELL (198) extracted a piece of steel from the vitreous three weeks after the accident, through an incision in the sclerotic. Twelve days afterward the eye was quiet and V = $\frac{20}{40}$. The fragment weighed 0.0046 of a grain. FITZGERALD.

HOLT (194) reports four cases in which great diminution or loss of vision occurred after blows on the eye, where no changes were observed in any part except in the retina, which was hazy, and in one instance there was a slight tortuosity of the veins. V was restored in a short time in all, though in one there was a relapse with ultimate restoration. BURNETT.

DE LAPERSONNE and VASSAUX (196) enucleated an eye which had become blind twenty-five years ago immediately after being injured by gunshot, on account of sympathetic neuritis. A shot had entered at the upper outer margin of the cornea, had passed through the zonula and vitreous, without touching the lens, and had penetrated the sclera outward from the papilla. The retina showed the typical picture of retinitis pigmentosa. There was marked atrophy of all the layers of the retina except of the layer of ganglion cells and of the connective tissue, which, like the

interfibrillar connective tissue of the optic nerve, had become hypertrophic ; proliferation of the pigment, which at some points penetrates into the vitreous, but mainly follows the course of the blood-vessels and enters their walls, increased to four times their usual thickness. Some of the small blood-vessels had been obliterated, but some new ones also had been formed. The authors think that the optic nerve was probably injured, as the changes in the retina agree in all respects with those seen in animals after dividing the optic nerve, and with those observed in a case of Pagenstecher after injury of the optic nerve.—*Arch. d'ophth.*, vol. iv. No. 1. V. MITTELSTÄDT.

MANZ (197) reports two cases of cysticercus cellulosæ, a rare affection, in Southern Germany. One was subconjunctival, the other subretinal, and both were successfully removed.

XXI.—OCULAR AFFECTIONS IN CONSTITUTIONAL DISEASES.

199. CONTI. Considerazioni sopra un caso di esoftalmia cachettica. *Gazz. de ospit.*, Nos. 26 and 27.

200. BURNETT, C. H., and OLIVER, CHAS. A. Case of recurrent dropsy of the left middle ear complicated, after eight years duration, by an acute attack of monocular optic neuritis (choked disc) on the same side, followed by general tabetic symptoms.

201. DEHENNE, A. Influence de l'état général sur les mauvais résultats de certaines opérations de cataracte. *Soc. franç. d'ophth.*, Jan. 31, 1884.

202. DIMMER (Jäger's clinic). Case of affection of the eye after recurrent fever. *Wiener med. Wochenschr.*, 1884, No. 12, p. 336.

203. DOR. Deux cas d'affections oculaires dépendant des troubles de la menstruation. *Soc. franç. d'ophth.*, Jan. 31, 1884.

204. FERRIER, F. Remarques cliniques sur un cas d'ophthalmie dans le cours d'un rhumatisme articulaire aigu. *Arch. d'ophth.*, vol. iv., No. 1, 1884.

205. HANSELL. The fundus of the eye in epilepsy. *The Polyclinic*, Nov. 1883.

206. JOLY. Amnésie et cécité verbale. *Le Scalpel*, 1883, No. 24, p. 147.

207. LITTLE, W. P. Eye-symptoms and conditions in Bright's disease. *Med. News*, Jan. 26, 1884.

208. MACKENZIE, ST. Chronic tubercle of choroid and brain. *Trans. Ophth. Soc. Unit. Kingd.*, vol. iii., p. 119.

209. MAREN, E. Contributions to the knowledge of tuberculosis of the eye. *Inaug. Diss.*, Strassburg. Berlin, 1884, 50 pp.

210. MASSALOUX LAMONERIE. Des manifestations de la syph. héréditaire tardive. *Thèse de Paris*, 1884.

211. SCHLESINGER, J. Contribution to the knowledge of the relation of the pathology of the retina to Bright's disease. *Inaug. Diss.*, Berlin, 1884, and Schöler, Beiträge z. Path d. Sehnerven u. d. Netzhaut bei Allgemeinerkrankungen, Berlin, 1884, Peters, pp. 51.

212. TERSON. Sur la rétinite albuminurique. *Rev. d'ocul. du sud-ouest*, No. 10, 1883.

MACKENZIE (208) observed tuberculosis of the choroid in a child æt. four. The post-mortem confirmed the diagnosis.

FITZGERALD.

MAREN (209) has compiled a number of cases of tuberculosis observed at Laqueur's and Hirschberg's clinic, based on which he discusses tuberculosis of the eye. In twelve cases the conjunctiva was affected, in seven the iris, in four the choroid, in one the retina, and in one the optic nerve; once there was tuberculosis of the brain combined with choked disc in both eyes and amaurosis.

HANSELL (205) had the opportunity of examining the fundus of an epileptic during a fit, and found no deviation from the normal.

BURNETT.

JOLY (206) observed a man æt. sixty-two, who had lost speech ten years ago after an attack of apoplexy. He conversed with those around him by gestures, and understood them well. It was impossible for him to read or write any thing except Arabian numbers, and his own name he could write with great difficulty.

v. MITTLESTÄDT.

CONTI (199) describes a case of Basedow's disease, in which there was a multitude of general symptoms, difficulty of deglutition, vomiting, swelling of the liver and icterus, albuminuria, slight œdema and dark coloring of the skin, and general loss of vitality, besides the typical symptoms of the disease. The author thinks that while in general an affection of the cervical portion of the sympathetic nerve is the cause of Basedow's disease, the general symptoms in his case must be ascribed to an affection of the whole vegetative nervous system. DANTONE.

DOR (203) reports two interesting cases of ocular affections preceding the first menstrual discharge. Hemorrhages into the

vitreous took place one day in a girl æt. fourteen, not yet menstruated, which disappeared and reappeared until the beginning of regular menstruation, when they ceased, and vision remained good. In the second case hysterical amblyopia developed with the beginning of the menses, which disappeared as soon as they became regular. Nicati observed swelling of the thyroid gland in a similar case. MARCKWORT.

SCHLESINGER (211) discusses forty-three cases of retinal affections in Bright's disease from Prof. Schöler's clinic, 67.5 per cent. males and 32.5 per cent. females. The ophthalmoscopic condition and visual disturbances were as follows: 1—hemorrhages and patches in 33 cases, 76.7 per cent.; 2—hemorrhages without patches in 6 cases, 13.9 per cent.; 3—changes extending to the periphery without amyloid degeneration of the kidneys in 3 cases, 6.9 per cent.; 4—the papilla alone affected in 3 cases, 6.9 per cent.; 5—in 2 no ophthalmoscopic change; 6—in 7 there was a retrogressive change in the retinal affection. Only once was one eye alone affected.

LITTLE (207). Among 911 cases of the disease reported by different observers, changes in the retina were noticed in twenty per cent. BURNETT.

TERSON (212) observed a case of retinitis albuminurica, in which the albumen appeared much later in the urine, and the patient died of uræmia. v. MITTELSTÄDT.

DEHENNE (201) reports a case of suppuration of the cornea after extraction of cataract in a patient suffering from cirrhosis of the liver and ascites. In one eye suppuration began three days after the extraction. In the other eye the result at first was good (V = 1); three months later, however, the patient suddenly felt a severe pain in the eye when returning home from a walk. The next day the whole cornea was infiltrated with pus, the eye painful, etc. Dehenne makes use of this case to support his belief that suppuration of the cornea after operations frequently is due, not to infection of the wound, but to the constitutional disease. MARCKWORT.

FERRIER (204) describes the course of a rheumatic affection of the eye in a woman free from gonorrhœa, whose relatives were all predisposed to rheumatic affections. An acute inflammation of the left knee-joint was followed by a catarrhal conjunctivitis, which became very intense in the right eye when the left tibiotarsal joint was attacked. Other joints then became affected;

superficial keratitis of both eyes, and after it had been cured exudative iritis ensued, which relapsed in the right eye with the rheumatism of the joint. The author concludes from his own observations and those of others that rheumatic affections of the eye are very rare in acute rheumatism of the joints, and that either the conjunctiva, cornea, or uveal tract may become affected, either at the same time or alternately with the affection of the joint. The prognosis is favorable. v. MITTELSTÄDT.

DIMMER (202) reports a case of affection of the eye after recurrent fever, consisting in an inflammation of the ciliary body and retina, and followed later by opacities of the vitreous.

MARCKWORT.

MISCELLANEOUS NOTES.

Drs. J. F. NOYES and GEO. E. FROTHINGHAM have been appointed consulting ophthalmologists, and Dr. LEARTUS CONNOR attending ophthalmologist, to the new Harper Hospital, Detroit, Michigan.

We are informed that some of the members of the MOORFIELDS OPHTHALMIC HOSPITAL staff in London have arranged to give short courses of instruction in Ophthalmoscopy, Refraction, and External Diseases of the Eye. The next series of these courses will begin early in May, and there will probably be another early in October.

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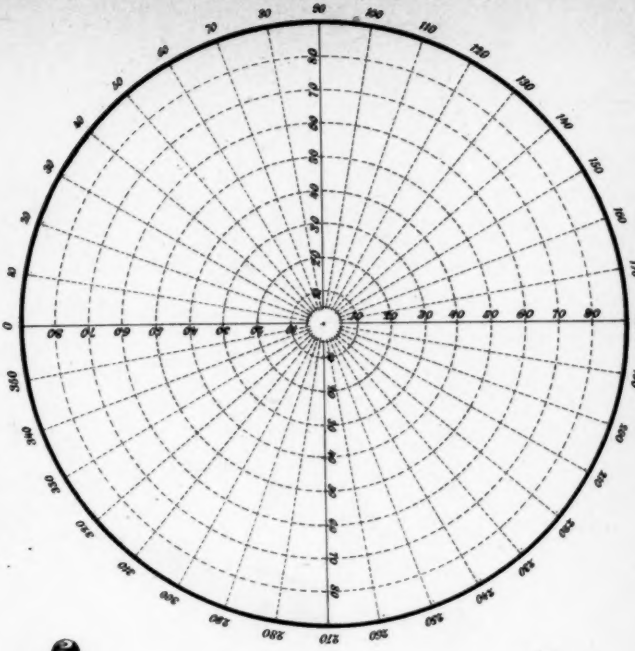

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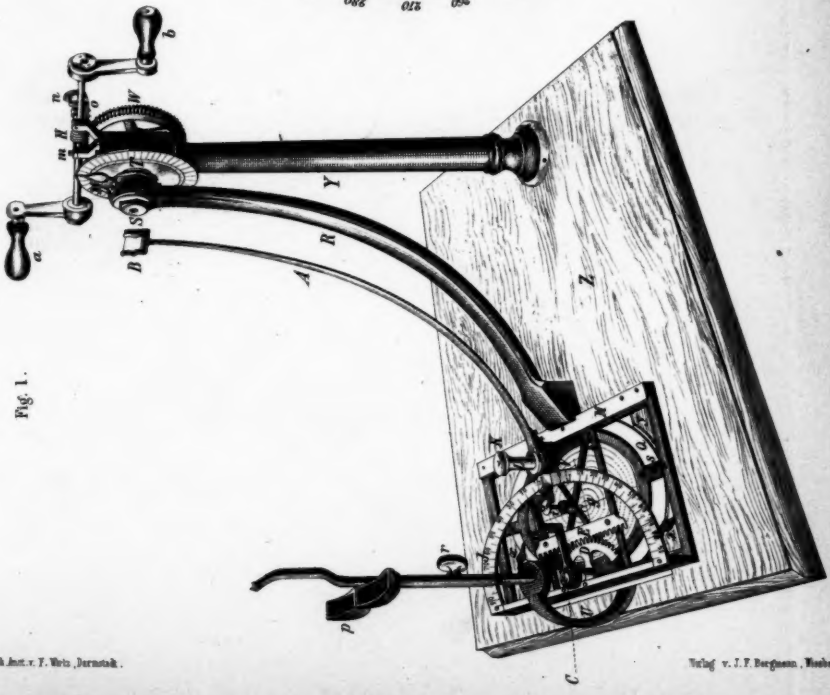

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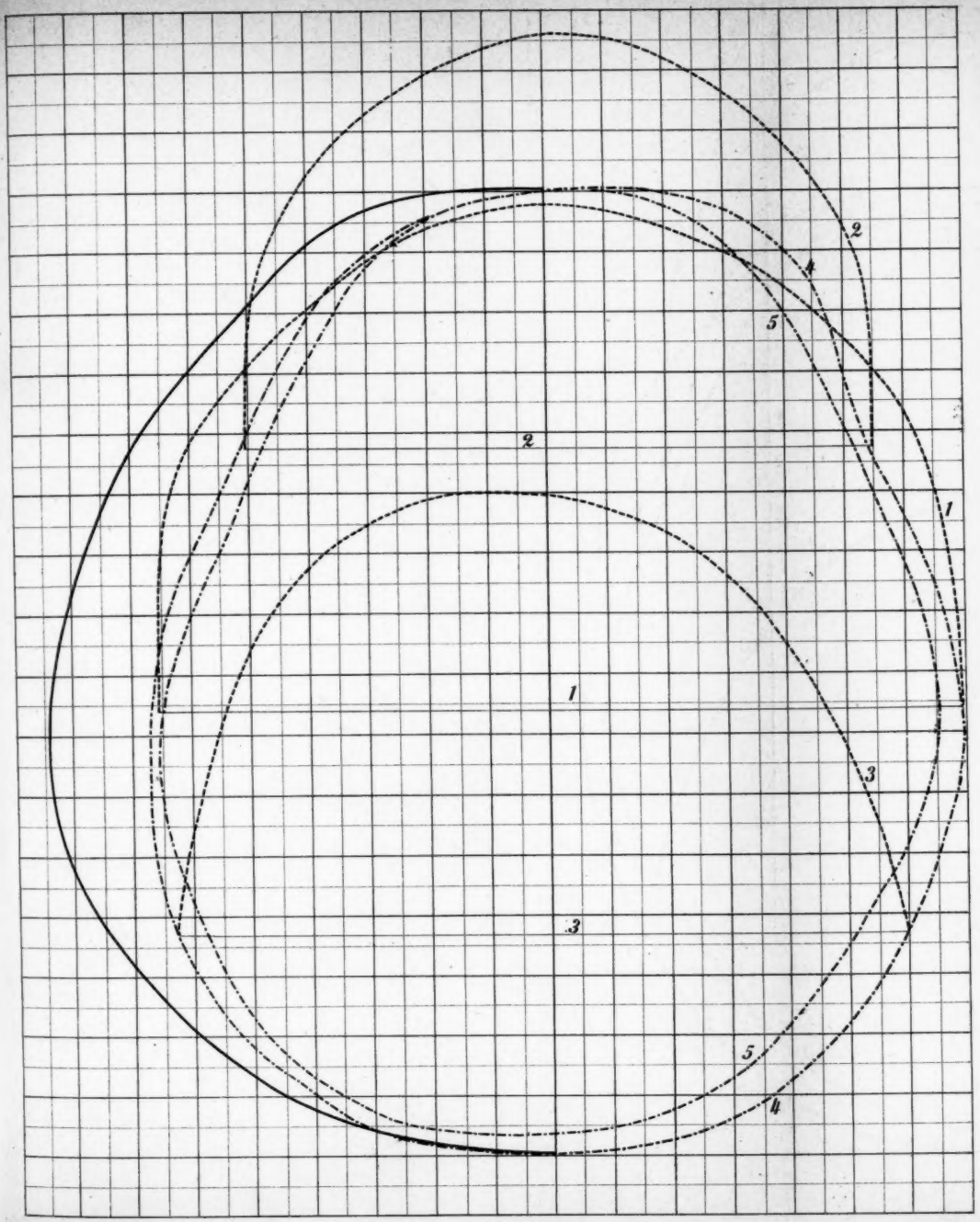

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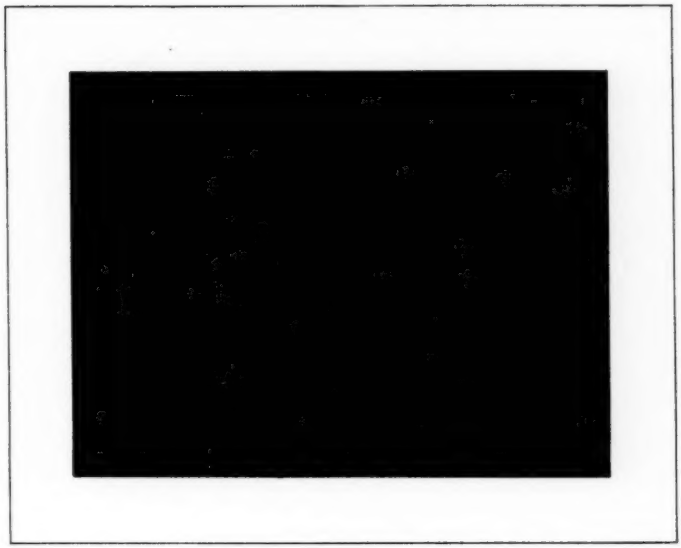

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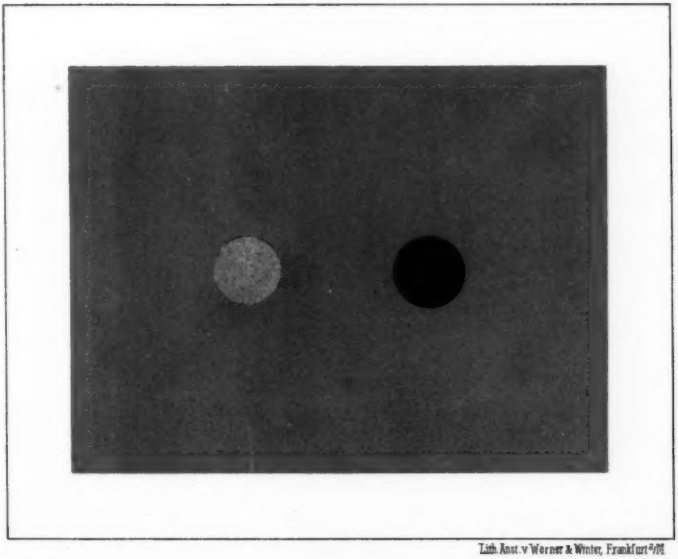

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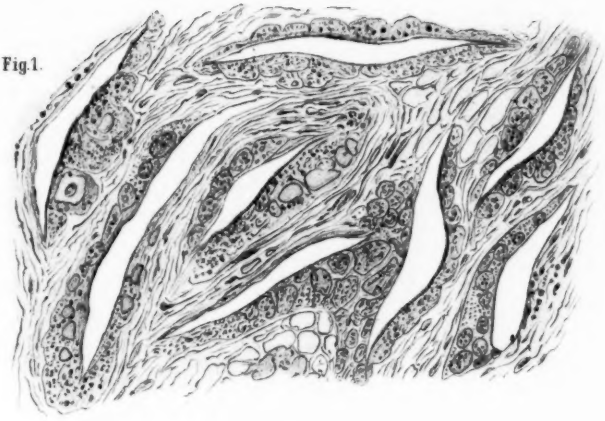

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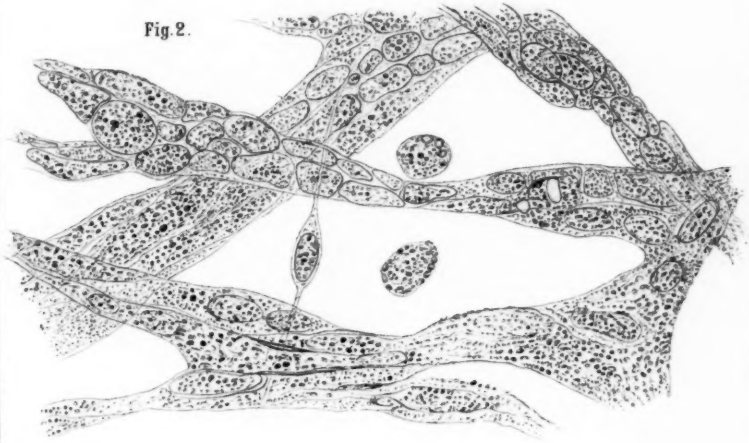

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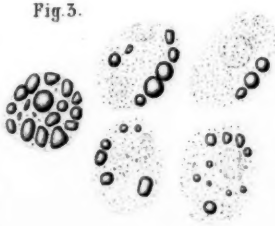

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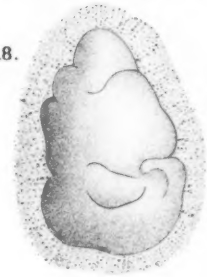

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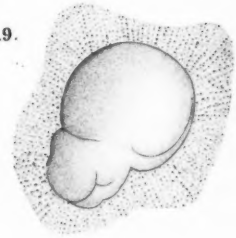

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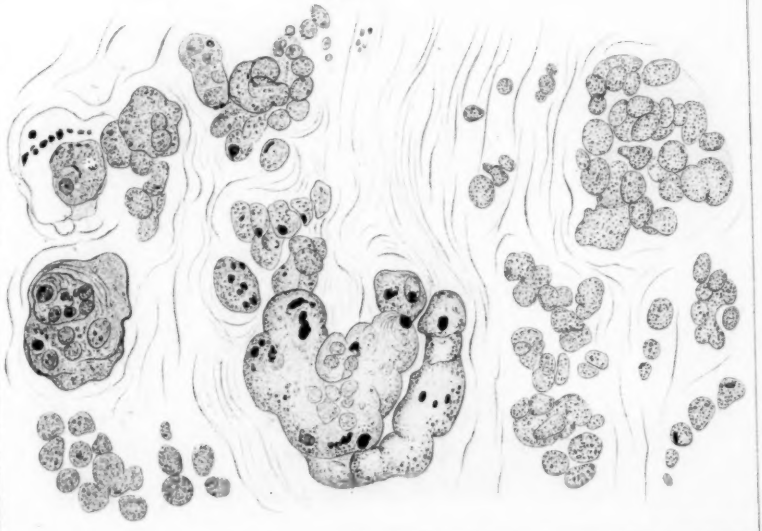

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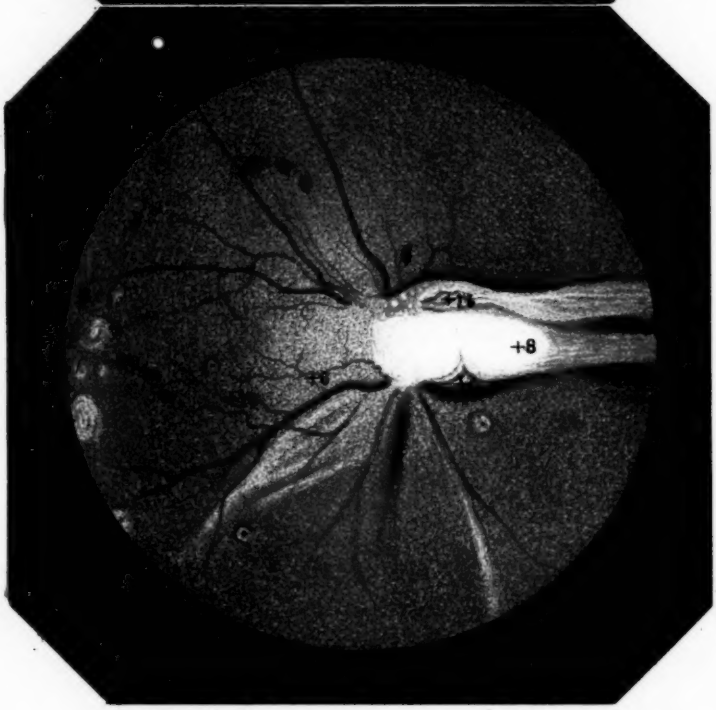

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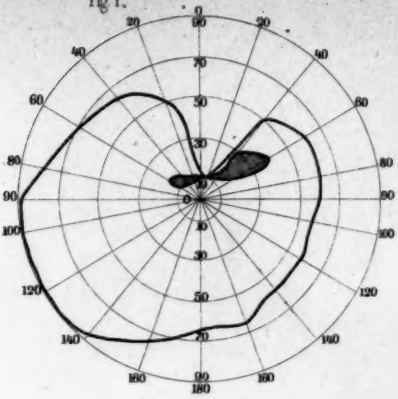

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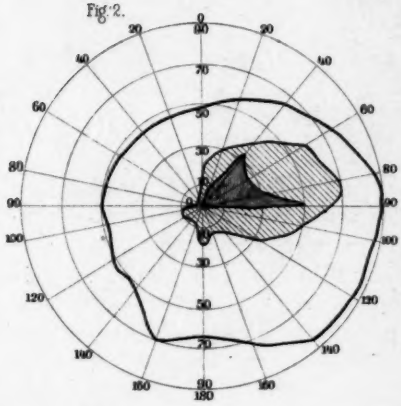

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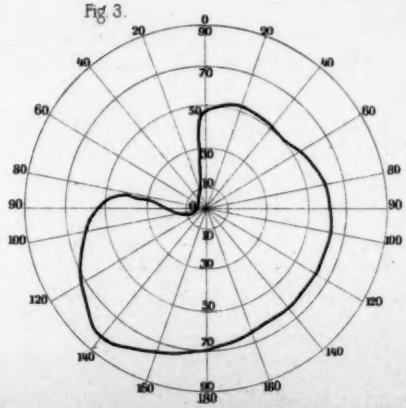

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Lith. Anst. v. F. Wirtz, Darmstadt.